
CONTRA COSTA COUNTY

GENERAL PLAN

Planning Commission
Hearing Draft

March, 1989

Note: This is a hearing draft General Plan.
It may be significantly revised before it is
adopted at the Board of Supervisors.

Underlined sentences in this draft
represent changes that have been made
to the previous draft plan.

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UNITED STATES
DEPARTMENT OF AGRICULTURE

Report of the
Commissioner of the General Land Office
for the year ending June 30, 1904

GENERAL STATEMENT OF THE LANDS OF THE UNITED STATES

Under the provisions of the Act of March 3, 1879, approved March 3, 1879, the Commissioner of the General Land Office is required to submit to the President and to the Senate a report of the lands of the United States, and of the progress of the disposal of the same, for each year ending on the 30th day of June.

The following is a statement of the lands of the United States, and of the progress of the disposal of the same, for the year ending June 30, 1904.

LANDS OF THE UNITED STATES

The following is a statement of the lands of the United States, and of the progress of the disposal of the same, for the year ending June 30, 1904.

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Dorothy Elsensus, Mobile Home Adv. Comm
Rachel Baldocchi, East CC Bd. of Realtors
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I. INTRODUCTION

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CHAPTER I

INTRODUCTION

Purpose

The purpose of the Contra Costa County General Plan is to express the broad goals and policies, and specific implementation measures, which will guide decisions on future growth, development, and the conservation of resources through the year 2005. The goals, policies and implementation programs contained in the General Plan represent the hopes and concerns of the residents of the County in terms of defining, and preserving, a "quality of life." The various elements or chapters of the plan are intended to provide clear, unambiguous guidelines to decision-making bodies in the County, as well as numerous other public agencies, who will be making decisions about the development of private and public lands and the locations and extent of infrastructure improvements such as sewers and roadways.

Although a General Plan is primarily concerned with the physical development of property, the consequences of a plan's growth policies obviously have impacts upon the social fabric of a community. For example, if a General Plan sets guidelines or allows the development of an industrial or business park in a specific location, more jobs may eventually be made available to local residents. Similarly, if a plan designates a park or other public facility site in a given area, or if a specific program encourages the construction of affordable housing, the policy will have a social and economic impact upon the quality of life in those affected locations.

Legal Authority

State law, specifically Sections 65300 through 65403 of the California Government Code, mandates that all cities and counties prepare and adopt a comprehensive, long term, and internally consistent General Plan to guide the future physical development of the jurisdiction. According to recent court decisions clarifying the intent of the state legislation, the role of each community's General Plan is to act as a "constitution" for development; it is the foundation upon which all land use decisions are to be based.

At one time, local General Plans were looked upon as a set of broad policies that had little actual role in development decisions. However, changes in the state law that have occurred since the original statutes were adopted in the 1950's have vastly boosted the importance of the General Plan in local decision-making. A General Plan may no longer be written as merely a "wish list" or vague view of the future of a city or county, it must now provide concrete direction for land use and facility approvals.

State law requires that once a local government has adopted its General Plan, local officials must implement it. The Government Code provides general direction to the planning agency for implementing the overall plan, but requires that very specific and detailed implementation programs be adopted for some of the individual portions of the plan, such as the housing and open space elements. The most commonly recognized form of implementation is the zoning ordinance, which specifies exact development standards (types of uses allowed, building heights and setbacks, etc.) for the various zones or districts within a jurisdiction.

State law now requires that the zoning and subdivision ordinances for almost all jurisdictions in California must be consistent with the adopted General Plan (Section 65860). In addition, the following land use approvals by a city or county must be consistent with its General Plan: all subdivisions; rezonings; specific plans; capital improvement programs; redevelopment plans; development agreements; park dedication ordinances; agricultural preserve contracts; housing authority projects; local coastal plans; and several other specific approvals. Although not specifically required by State statute, a 1984 Appellate Court decision also held that the approval of all use permit applications must be consistent with the local General Plan. Thus, the effect of recent State legislation and court decisions is to make most implementing ordinances used by local jurisdictions in day-to-day land use decision-making subservient, or secondary, to General Plan policies and land use maps.

Components of the General Plan

California statutes require that all cities and counties prepare and adopt a General Plan that contains seven mandatory "elements" or subject categories, which must adequately cover the issues summarized below:

Land Use Element. This element describes the general distribution and intensity of uses of land for housing, business, industry, open space, public facilities, etc., with accompanying maps.

Circulation Element. This element identifies the location and extent of existing and proposed streets, arterials, highways, transportation routes and terminals, and other related facilities.

Housing Element. This element contains a comprehensive assessment of current and projected housing needs for all segments of the community, a list of policies to meet the needs, and an inventory of specific action programs to implement the policies.

Conservation Element. This element addresses the conservation, development, and use of natural resources such as water, forests, soils, rivers, and mineral deposits.

Open Space Element. This element details plans and measures for preserving open space areas in order to manage the production of resources, to provide outdoor recreation, to preserve the public health and safety, and to identify important agricultural lands.

Safety Element. This element establishes policies and programs to protect the community from risks associated with seismic, geologic, flooding, wildfire and other hazards.

Noise Element. This element identifies noise problems in the jurisdiction, defines standards and mitigations and provides coordination with land use policies.

The detail that each issue is afforded in the plan depends upon local conditions and the relative perceived importance of the issue. In addition to the seven element categories listed above, state law encourages local jurisdictions to prepare and adopt any other elements or address any other issues that relate to the physical development of the jurisdiction.

The Contra Costa County General Plan includes the seven mandated elements, and has combined two of them into one category (Open Space/Conservation). The plan also addresses several optional elements or programs, such as public facilities and services and growth management. The plan is organized in the following fashion:

- Chapter I: Introduction
- Chapter II: Planning Framework
- Chapter III: Land Use Element
(includes all County-wide land use goals, policies, and implementation measures, as well as more detailed land use policies applied to specific unincorporated areas)
- Chapter IV: Growth Management Element
(includes a Growth Management Program)
- Chapter V: Transportation and Circulation Element
- Chapter VI: Housing Element
- Chapter VII: Public Facilities/Services Element
(includes policies regarding water and sewer service, flood control, police and fire protection, solid and hazardous waste management, parks and recreation, schools, childcare and other public facilities).

- Chapter VIII: Open Space/Conservation Element
(includes overall goals and policies for the County, as well as policies regarding vegetation and wildlife; agricultural resources; mineral and energy resources; urban and rural creeks; air quality; scenic resources; and historic/cultural resources).
- Chapter IX: Safety Element.
- Chapter X: Noise Element.
- Chapter XI: Technical Appendices

Definition of Maps, Goals, Policies, and Implementation Measures

The California Government Code states that "the general plan shall consist of a statement of development policies and shall include a diagram or diagrams and text setting forth objectives, principles, standards, and plan proposals" (Section 65302). The purpose of this section is to define these terms in the context of this General Plan.

General Plan Diagrams (Maps)

The diagrams that are required in a General Plan under the State law have been defined as a graphic expression of the plan's development policies. However, there is a debate among planners and lawyers alike about how detailed or general the maps (and text) should be in a General Plan. The diagrams or maps in a General Plan need not be as detailed as other regulatory maps, such as zoning maps, but they should be detailed enough so that the users of the plan can reach the same general conclusion regarding the appropriate use of any parcel of land at a particular phase of a city or county's physical development.

In many instances, a specific parcel may be located in more than one General Plan land use designation, since these designations tend to follow natural features of the land, which are not always contiguous with property lines. For a large vacant parcel the hilly, unbuildable portion of the site may be designated for open space uses, while the flat areas may be designated for housing or commercial uses.

Decision makers should be able to use the General Plan, including its diagrams or maps, in coordinating day-to-day land use and infrastructure decisions. At the same time, given the long range nature of a General Plan, its text and maps should be general enough to allow a degree of flexibility in decision making as times change. It's necessary for a plan to look at the broader issues and not get bogged down in the smaller, day-to-day handling of details.

For example, a General Plan may recognize the need and desirability of a community park in a proposed residential area, but the precise location of the park may not be known when the plan is adopted. The plan does not need to

pinpoint the location, but it should include a generalized designation on the diagram showing the general location, along with policies indicating that the park site will be selected and reserved when the area is developed.¹

Goals

A goal statement sets the direction for more specific policies and implementation programs. A goal is an ideal future end, condition, or state which is related to the public health, safety, or general welfare toward which planning measures are directed. A goal is a general expression of community values and, therefore, is abstract in nature. Consequently, a goal is generally not quantifiable, time dependent or suggestive of specific actions for its achievement.²

Policies

A policy is a specific statement that guides decision making. It indicates a clear commitment of the local legislative body. Each policy should be based upon a General Plan goal, as well as the analysis of data. For a policy to be useful as a guide to action it should be clearly written and unambiguous. The practice of adopting broadly drawn and vague policies is no longer acceptable. Clear policies are particularly important when it comes to judging whether or not zoning decisions, subdivisions, public works projects, etc. are consistent with the General Plan.

When considering policies, local officials need to be aware of the difference between "shall" and "should." "Shall" indicates an unequivocal directive. "Should" signifies a less rigid directive, to be honored in the absence of compelling or countervailing considerations. Use of the word "should" to give the impression of greater commitment than actually intended is a common but unacceptable practice.³

Implementation Measures

An implementation measure is a specific action, procedure, program, or technique that carries out a General Plan policy. The most obvious example of an implementation measure is a jurisdiction's zoning ordinance. Often, implementation measures cited in a General Plan will consist of a list of specific programs that should be carried out after the plan is adopted. When a plan is updated, a careful review of the list of previously adopted implementation measures can indicate how realistic and effective the plan has been during the previous years.

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1. State of California Office of Planning and Research, General Plan Guidelines, Sacramento, June, 1987, pages 14-16 (paraphrased).
 2. *ibid*, page 17.
 3. *ibid*, page 18.

The Difference Between Zoning and General Plan Designations

The most common misunderstanding about General Plans in California is their relationship to adopted zoning ordinances. As the previous discussion has already indicated, **zoning is the implementation of a General Plan and it must be consistent with General Plan policies and land use designations for specific properties.** In simple language, this means that **zoning is secondary or subservient to the General Plan; in the event of a conflict, the General Plan is followed.**

State law and accompanying court decisions have reinforced the mandate that zoning and subdivision decisions by local jurisdictions must be consistent with General Plan policies. A recent Appellate Court Case decision went so far as to say that the consistency requirement has elevated the General Plan from an "exhortation" to a "commandment."¹

Immediately after the adoption of a General Plan, it is vitally important that a program to begin the systematic review and revision of zoning and other ordinances be undertaken by staff, to ensure that the ordinances governing day-to-day land use decisions do not conflict with newly adopted plan policies. Unfortunately, due to staffing limitations and community opposition, often times a zoning ordinance will not be revised to be made consistent with the new General Plan (or General Plan amendment), which causes confusion to members of the public for years to come. A key implementation program is to rezone land to conform with this plan upon adoption.

How to Use the General Plan

The General Plan includes maps in each element, as well as accompanying text that lays out goals, policies, and implementation measures grouped around specific issues. **While the land use map in the Land Use Element is most often referred to by the public, it does not fully represent the County's General Plan policies for a given area.** The map only represents policies that can be shown graphically, such as appropriate types and densities of development. It does not illustrate the appropriate timing of development or other constraints to development potential.

State legislation requires that the various elements comprise an integrated, internally consistent, and compatible statement of the goals, policies, and programs. This means that each of the General Plan elements are equal in legal status and that the direction given by one element may not be superior or subordinate to that of another element.

There may be important additional policies concerning a given property or area within the text of the Land Use Element or any of the other elements. The land use map should be used in conjunction with the other maps within the plan (e.g.

1. De Bottari v. City Council, 171 Cal. App. 3rd 1204 (1985), as cited in Daniel J. Curtin, Jr., California Land Use and Planning Law, 1987 edition, page 48.

the flooding and seismic hazards maps), as well as with specific written goals, policies, and implementation measures, in order to determine whether a development proposal for a particular site is fully consistent with the County General Plan.

Thus, if a property owner or other member of the public wants to know what General Plan policies might apply to a specific property, he or she can begin by examining the Land Use Element map to determine what land use designation is applied to the property (e.g. "Single Family Residential-Low Density," "Commercial," etc.). The property owner could follow the steps outlined below in order to find the maps and policy language in the Land Use and other General Plan elements which could affect development or redevelopment of the property:

- (1) examine the Land Use Element map to determine the land use designation for the property;
- (2) check the maps in the other General Plan elements, especially the Open Space/ Conservation and Safety Elements, to see if the property is located within or adjacent to some type of resource or hazard area (e.g. a "significant ecological resource area," a flood hazard area, an area of high liquefaction potential, etc.);
- (3) read the general goals and policies in the Land Use Element, the provisions of the County's growth management program (Chapter IV), and other relevant elements to determine how they might affect development or redevelopment of the area in which the property is located;
- (4) check Figure III-1 in Chapter III (Land Use Element) to determine if any detailed policies or development standards apply to the area in which the property is located (e.g. if the property is located in Crockett, read the section entitled "Policies for the Crockett Area"); and
- (5) if the property is located in a rural area, check whether public facilities such as water or sewer serve the area and read the relevant parts of the Public Facilities/Services Element.

Note that the above sequence of examination is the bare minimum that should be followed. Depending on the specific location or characteristic of the area or property, several other steps should be added so that other portions of the General Plan are consulted. For example, if the property is located adjacent to a known noise generator, such as a highway or heavy industrial area, the Noise Element should be examined to determine whether the property is included within a mapped noise "contour" line of a certain level. If it is located within a specific noise contour, General Plan policies in that element direct that noise impacts affecting new development on the property must be properly mitigated.

Similarly, if a proposed project is located on a property that is crossed by a riparian vegetation or a creek, the specific policies that apply to the preservation and maintenance of creeks and adjacent lands must be consulted in the appropriate section of the Open Space/Conservation Element.

The General Plan Amendment Process

State law stresses that a General Plan can no longer be viewed as a static, "end state" document, but must adequately address the changing issues and policies of a jurisdiction during the designated "planning period." Thus, a process for considering amendments to the plan must be available in order to reflect changing conditions and community values. On the other hand, however, during the process of preparing this updated County plan a comprehensive study has considered the need for urban development over a twenty year time span.

Amendments to the plan can be initiated by the County (through the Planning Commission or Board of Supervisors) or requested by private individuals. A typical General Plan Amendment (GPA) involves changing a land use designation on a property or series of properties to allow urban development of what was previously agricultural lands, or to allow development of a different use or density than what is permitted under the existing plan. For example, a typical GPA will request a change in designation for a group of properties from "Agricultural Lands" to "Single Family Residential-High Density," or from a "Single Family" designation to a "Multiple Family" category. A GPA may also involve the reclassification of a roadway from a "collector" to an "arterial."

State law generally limits the number of amendments which can be made to any mandatory element of a jurisdiction's plan to four each calendar year (Government Code Section 65358 (a)). However, State law does not limit the number of individual requests which can be packaged into each of the adopted General Plan Amendments.

When a request for a GPA is received by the County, staff forwards the request to the Board of Supervisors with a recommendation on whether to proceed with a study of the application. After the Board authorizes the GPA study, staff collects the appropriate application fees and prepares an environmental evaluation of the proposal as required by the California Environmental Quality Act. After the environmental documentation has been prepared, staff analyzes the request and prepares a staff recommendation. The General Plan Amendment request is then scheduled for a public hearing at the appropriate Planning Commission. After receiving public testimony, the Commission votes to recommend approval, denial, or modification of the request. The recommendation is then sent to the Board of Supervisors for another public hearing and a final decision.

Each General Plan Amendment request must be carefully weighed as to its consistency with the adopted goals and policies of the existing General Plan. In reviewing proposals for GPA's, officials should remember that the General Plan is a policy document for the entire community and that it may only be amended "in the public interest" (Government Code Section 65358 (a)). Every adopted GPA must be consistent with the rest of the plan and appropriate changes need to be made to maintain consistency.

If the County finds itself adopting frequent piecemeal amendments, this may indicate that major defects exist in the plan, due to either changing community values or needs, or because the plan is too inflexible and precise. In this case, the County should not further erode the General Plan through amendments. Instead, it should undertake a major revision of the plan.

II. PLANNING FRAMEWORK

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CHAPTER II

PLANNING FRAMEWORK

Introduction

This chapter provides some background information on Contra Costa County and sets the stage for the following General Plan goals, policies, and implementation measures. The chapter briefly describes the relationship between the cities and the unincorporated communities, the physical setting of the County, and its place within the Bay region. The chapter also summarizes recent trends regarding population and housing growth within each of the nineteen general purpose jurisdictions in the County.

Relationship between the County General Plan and the Cities

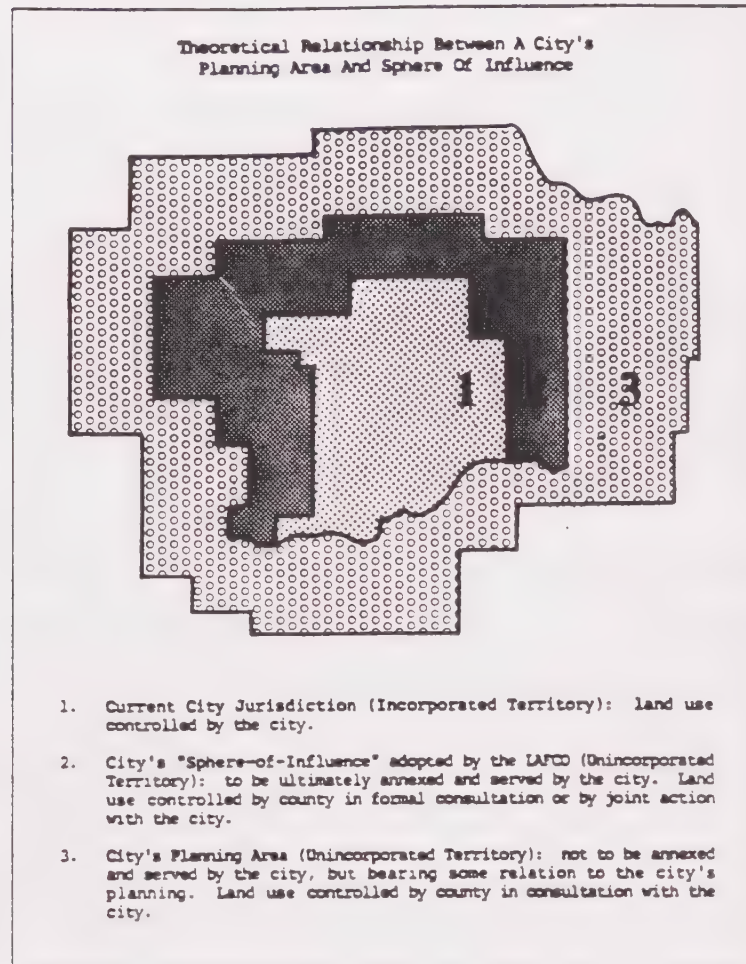
The State General Plan laws stipulate that a city or county must adopt a plan that covers all territory within the legal boundaries of its jurisdiction as well as "any land outside its boundaries which in the planning agency's judgement bears relation to its planning" (Section 65300). The State guidelines indicate that counties should include incorporated cities within their planning areas since the activities of cities affect many county concerns. The provisions of the cities' plans should be integrated into the county plan to the extent possible and county objectives, policies and implementation programs should reflect the projected impacts of city planning. In addition, each city plan should¹ be represented in generalized form on the county's General Plan diagram (map).

Contra Costa County includes eighteen incorporated cities; each of which has adopted its own General Plan. Most of the General Plans have defined their planning areas to include unincorporated lands within and beyond their "Sphere of Influence" boundary, and the cities have designated these lands for some land use. (A Sphere of Influence boundary is adopted for each city and special district by the Local Agency Formation Commission (LAFCO) of Contra Costa County. The Sphere line includes lands outside the jurisdictional boundaries which are expected to be ultimately annexed and served by the agency.)

Figure II-1 illustrates the relationship between a hypothetical city's incorporated territory, its Sphere of Influence and its extended planning area. Figure II-2 on the following page is a map illustrating all of the Sphere of Influence boundaries for the eighteen cities and their unincorporated and incorporated limits as of late 1988.

1. State of California Office of Planning and Research, General Plan Guidelines, Sacramento, June, 1987, page 7.

FIG. II - 1 CITY JURISDICTION, SPHERE OF INFLUENCE
AND PLANNING AREA

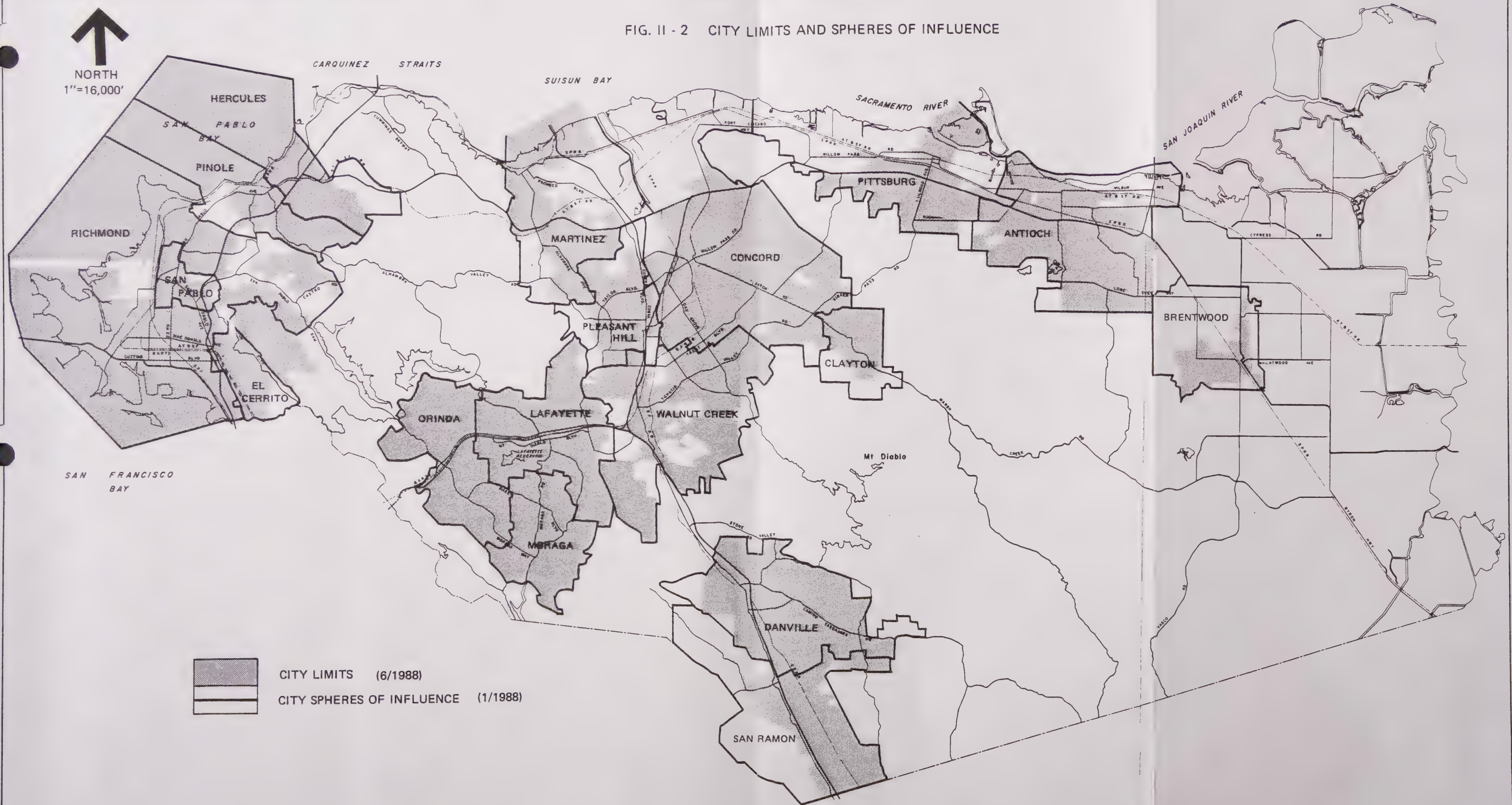


Development within a city's Sphere of Influence may be approved and constructed under County jurisdiction or in the alternative, a developer may request that a project involving property within the Sphere be approved and annexed into the city. A city must then adopt a General Plan designation for the property (if the city's General Plan does not already indicate a designation for it) and pre-zone the parcel (indicate what the zoning will be when it is annexed). The County LAFCO then votes on the annexation request.

Over the last decade as unincorporated land areas adjacent to cities have been annexed and developed, and the incorporation of new cities has been approved, the County's role in approving and servicing new residential areas has shrunk dramatically. In 1980, approximately 44% of all the housing that was built occurred under County jurisdiction, with the remainder (56%) approved by the cities.

The cities' portion of residential growth climbed to 67% of the total in 1982, and reached 77% in 1984, following the incorporations of Danville and San Ramon. Since 1984, the portion of growth occurring in the County as compared with the cities has remained steady at a ratio of about three quarters of the new housing developed within the cities and one quarter built in the County.

FIG. II - 2 CITY LIMITS AND SPHERES OF INFLUENCE



**CONTRA COSTA COUNTY
CALIFORNIA**

Sub-Areas of Contra Costa County Defined

Contra Costa is a suburban county located about 40 miles east of San Francisco. It is a large county, covering over 470,000 acres and 732 square miles of land area. It stretches from the built-up, urban shoreline along San Francisco Bay to the agricultural lands of the San Joaquin-Sacramento River Delta fifty miles away. While many people perceive Contra Costa County as predominantly an enclave of upper middle class suburban bedroom communities, the County's population and built environment represents a rich diversity from one area to another.

This plan uses the common distinction made by residents to differentiate between the various geographic sub-areas of the County. Six different sub-areas of Contra Costa are illustrated in Figure II-3. The County is usually divided into at least three distinct areas: West County, Central County, and East County. In turn, Central and East County have been further subdivided. Central County is composed of North Central County, Lamorinda, and the San Ramon Valley. East County can be further separated into Pittsburg-Antioch and Other East County. Each of these areas is described below.

The **West County** area includes the urbanized shoreline of the San Francisco and San Pablo Bays, which is separated from the rest of the County by the Briones Hills and the open space watershed lands owned by the East Bay Municipal Utility District. West County was among the first areas of the County to develop with medium density suburbs and industry. The western sub-area includes the cities of El Cerrito, Richmond, San Pablo, Pinole, and Hercules, as well as the unincorporated communities of Kensington, El Sobrante, Rodeo, Crockett, and Port Costa.

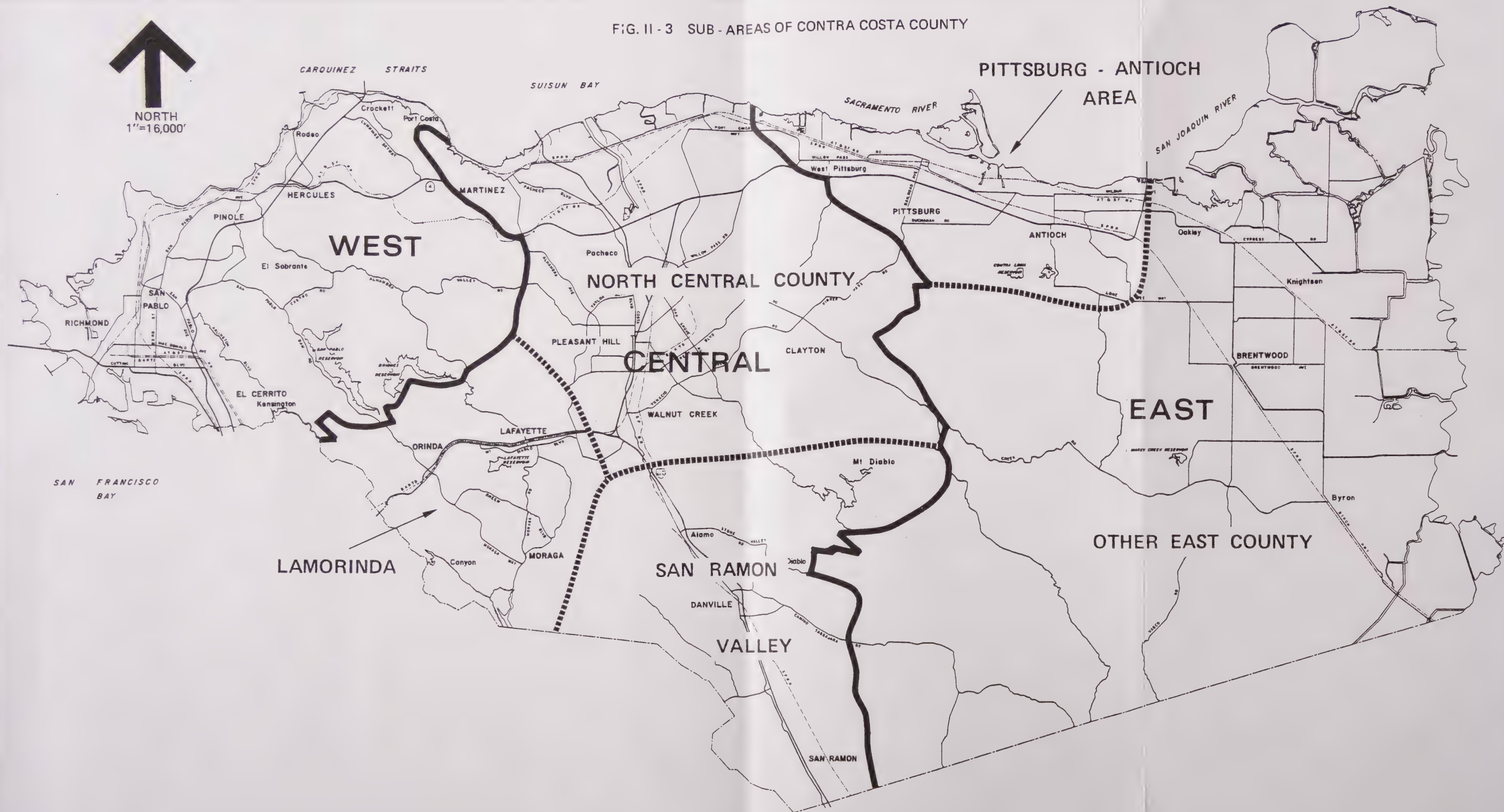
The **Central County** sub-area is the largest, including ten of the eighteen cities in Contra Costa and over half of the total population. Central County is composed of all the low density bedroom communities that have developed in the flat valleys between the East Bay Hills and the Diablo Range to the east, extending north and south of Mt. Diablo.

Central County includes the **Lamorinda** area (the cities of Lafayette, Moraga, and Orinda, as well as the unincorporated area of Canyon); **North Central County**, which takes in all of the cities and unincorporated communities along the northern Interstate 680 corridor (the cities of Walnut Creek, Concord, Clayton, Pleasant Hill, and Martinez and the unincorporated areas of Pacheco, Vine Hill, Clyde, the Pleasant Hill BART station, and Saranap); and the **San Ramon Valley** (unincorporated Alamo, the cities of Danville and San Ramon, and the unincorporated Blackhawk and Tassajara area).

East County includes the fast growing **Pittsburg-Antioch** area, which stretches along Route 4 from the Willow Pass grade northeast of Concord to Route 84 near Oakley. The Pittsburg-Antioch area includes the two cities, as well as the unincorporated community of West Pittsburg.

The term **"Other East County"** refers to the remainder of the East County sub-area, which includes the city of Brentwood, and the unincorporated areas of Oakley, Bethel Island, Knightsen, Byron, and Discovery Bay. East County also includes much of the hilly terrain of the Diablo Range, which makes it the largest portion of the County in terms of land area.

FIG. II - 3 SUB - AREAS OF CONTRA COSTA COUNTY



Recent Growth in Contra Costa County

Contrary to some common misconceptions, Contra Costa County has not been one of the fastest growing areas in California during the 1980's. During the period 1980 through 1987, California has grown by almost 4.4 million residents. More than half (59%) of this population growth, or about 2.6 million new residents, occurred in the five counties of Los Angeles, San Diego, Orange, San Bernardino, and Riverside in Southern California.

Only 12% of the State's population growth during the same period was in the San Francisco Bay region, which has grown by about 600,000 persons since 1980. The Bay Area is now home to 5.8 million residents scattered throughout nine counties. Three of the counties in the Bay region have grown very slowly during the 1980's (Marin, Napa, and San Mateo), the four largest counties (Santa Clara, Alameda, Contra Costa, and San Francisco) have grown at a steady rate that has been less than the statewide average, while the remaining two northern counties (Solano and Sonoma) are experiencing very rapid growth rates, as they change from a rural to suburban environment.

Although Contra Costa's growth rate during the 1980 to 1987 period (14.8%) was higher than the regional average, it's interesting to note that in the East Bay, Alameda County has added 40% more residents (136,200) since 1980 than Contra Costa (97,200).

Residential growth in Contra Costa County has added 55,600 units of new housing between 1980 and 1988, for an average of over 6,100 homes completed each year. But homebuilding during the 1980's has fluctuated from one year to the next, consistent with the national economic climate. Residential construction began a nosedive during the early 1980's, when very high interest rates and a national recession caused housing completions to reach their lowest point in 1982. By the end of 1984, however, the local homebuilding industry had recovered and the last half of the decade has seen a substantial increase in construction.

During the year ending December 31, 1988, over 8,700 housing units were completed throughout Contra Costa County, which represented a decrease of 28% in the number of completions during calendar year 1987. However, homebuilding during 1987 was exceptionally strong (11,143 units), compared to approximately 8,000 housing units that were completed in the County during the 1986 calendar year and 6,300 completed during 1985.

The area which has absorbed the most new housing during the 1980's has been the **North Central** sub-area, by far the most populous part of the County. Almost one half of the County's housing stock is located in the communities between Walnut Creek and Martinez along the north I-680 corridor and in Lamorinda. The housing growth measured in this area since 1980 has been significant, approximately 17,800 housing units, although the rate of growth has been relatively low, only a 15% increase between 1980 and the end of 1988 (see Table II-1).

In contrast, the growth in the **San Ramon Valley** since 1980 has been a relatively small in comparison to the other three sub-areas of the County, 9,700 units of new housing, yet the rate of growth has been 44% over the eight year period.

TABLE II-1
RESIDENTIAL GROWTH IN
CONTRA COSTA COUNTY BY SUB-AREA
(1980-1988)

	<u>Housing Units (1980)</u>	<u>Growth in Housing (1980-1988)</u>	<u>Growth (% increase)</u>
East County	39,385	16,953	43.0%
North Central	119,149	17,818	15.0
San Ramon Valley	21,956	9,651	44.0
West County	71,428 -----	11,174 -----	15.6 ----
TOTAL: (or average)	251,918	55,596	22.1

Source: U.S. Department of Commerce, 1980 Census,
Tape STF 3; Contra Costa County Community
Development Department

East County has grown by 17,800 units over the last nine years, which translates into a 43% increase since the 1980 census. In **West County** 11,200 housing units were finished, equal to a 15.6% growth rate, similar to the rate in North Central County. Overall, Contra Costa County increased its housing stock by 22% during the years 1980 through 1988.

In terms of the type of housing that has been constructed in Contra Costa County, in 1980 about three quarters (73%) of the new housing built in the County consisted of single family homes, 7% was condos or townhouses, and 20% was apartment units. Over the last nine years the mix of new housing has shifted significantly away from homes on individual lots toward attached housing (either condos or apartments).

During recent years, the portion of new housing that is condominiums has remained relatively constant (20% to 27%), but for the first time in 1987, new apartment construction outpaced single family homebuilding. Detached single family homes represented only 35% of all new construction in 1987, while apartments made up 39% and condominiums accounted for 27%. Although rental apartment building has flourished during the mid-1980's, construction has begun to weaken in the last year due to changes in Federal tax laws.

In terms of employment growth, since December, 1980 employment in the County has grown by approximately 70,000 jobs (See Table II-2). Much of the job increase has been measured in the categories associated with the tremendous office and retail development along the I-680 corridor. The number of jobs in the predominantly "white collar" FIRE category (finance, insurance, real estate) more than doubled during the 1980 through 1988 period, growing from 12,200 positions to 26,500 jobs. Likewise, the "transportation, communications, utilities" sector increased by 73% to 20,600 jobs. This latter category includes a major firm (Pacific Bell) that relocated thousands of office jobs to the Bishop Ranch Business Park in San Ramon.

The greatest amount of job growth, however, was registered in the "services" sector, where over 21,000 new positions were created. Within this category, the fastest growing employment areas were business services, health services, and engineering/accounting services. Large numbers of new jobs (over 12,000) were also added in retail trade, primarily through positions created in the restaurant/bars sector.

Due to steady housing and commercial growth in Contra Costa County during the 1980's, employment in the construction industry has increased by over 50% since 1980, adding approximately 7,000 jobs. Manufacturing continues to be an important employer, although overall the number of manufacturing jobs in the County has remained stable over the last eight years. The strongest growth occurred in the petroleum refineries, where over 2,000 jobs were added. Older industries such as metal fabrication, however, showed significant job losses as did some large high technology "instruments" producers, who cut work forces during the 1980's.

Table II-2

Employment Growth by
Industrial Sector¹
(1980-1988)

	<u>1980</u>	<u>1988</u>	<u>% Change</u>
Agriculture/Mining	1,400	800	-42.9%
Construction	13,300	20,200	51.9
Manufacturing	27,900	28,000	0.3
-Nondurable products ²	15,600	19,000	21.8
-Durable products ³	12,300	9,000	-26.8
Transportation/Com- munications/Utilities	11,900	20,600	73.1
Wholesale Trade	8,800	11,000	25.0
Retail Trade	47,800	60,200	25.9
Finance/Ins./Real Estate	12,200	26,500	117.2
Services	41,400	62,900	51.9
Government	40,000	41,900	4.8
TOTAL	205,300	275,000	34.0

Source: California Employment Development Dept.

- Notes: (1) Estimates are for December of each year.
Estimates do not include self employment,
household workers, or persons involved in
labor-management disputes.
- (2) Nondurable products include food and paper
processing, printing, and chemical and petroleum
refining.
- (3) Durable products include fabricated metals
and machinery, and electrical/electronic goods.

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CHAPTER III

LAND USE ELEMENT

Purpose and Legal Authority

The purpose of the Land Use Element of the Contra Costa County General Plan is to establish goals and policies that will guide future development and the use of physical resources in a manner consistent with the desire of residents to preserve a given "quality of life" in the County. Section 65302(a) of the California Government Code states that the Land Use Element "shall designate the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid wastes disposal facilities and other categories of public and private uses of land."

The State Code further stipulates that the Land Use Element for every jurisdiction shall include "a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the plan," shall identify areas covered by the plan subject to flooding, and shall be reviewed annually with respect to such areas.

As with other elements of the General Plan, the goals, directive policies, and implementation measures of the Land Use Element are directory, rather than advisory. Under State law, many land use approvals made by planning commissions and councils, including rezonings, subdivisions, development agreements, redevelopment and specific plans, park dedications, and others, must be consistent with and conform to the jurisdiction's General Plan.

Although the Land Use Element and its accompanying map are often thought by many to be the most important part of the General Plan, State legislation requires that the various elements comprise an integrated, internally consistent, and compatible statement of goals, policies, and programs. This means that each of the General Plan elements are equal in legal status and that the direction given by one element may not be superior or subordinate to that of any other element.

Many of the issues that are discussed in the Land Use Element overlap issues that may be addressed in other General Plan elements. Almost any issue dealing with the physical characteristics of land in the County will have land use implications, even if specific issues such as flooding or prime agricultural soils are not addressed in the Land Use Element.

Readers of this General Plan should therefore be aware that the policies which may affect development of a specific property are not necessarily stated in only one portion of the overall text. All of the maps and text in each element should be taken into consideration when determining the General Plan policies for a particular area or property.

Readers are referred to the section in Chapter II entitled "How to Use the General Plan" for a recommended process by which to determine which General Plan maps and policies are likely to apply to any specific property.

Planned Levels of Development

The Contra Costa County Land Use Element map, at a scale of 1 inch to 4000 feet, is included in the pocket at the back of this document.

As noted previously in Chapter II, California planning laws advise counties to include incorporated cities within their General Plans, even though a county has land use jurisdiction only in the unincorporated areas. Thus, this General Plan covers all of Contra Costa County, and the following analysis includes the impacts of buildout of the eighteen city plans.

This Land Use Element, and the other elements of the General Plan, reaffirm many of the goals and policies of the prior County plan and plan amendments that have been adopted incrementally over the years. The General Plan will accommodate an ultimate population of approximately 931,000 persons, as compared to 1987 projections by the Association of Bay Area Governments (ABAG) that indicate Contra Costa County will reach 901,000 residents by the year 2005 (see Table III-1). However, preliminary ABAG projections from the upcoming 1989 series have been revised significantly upwards, to a projected 2005 County population of 925,300.

This General Plan employs a "base year" of 1985, upon which all recent and projected growth is measured. Since 1985, it is estimated that residential projects which have been built or approved by the eighteen cities and the County will add some 127,000 persons to the population. (It should be kept in mind that some approved projects, such as very large subdivisions, are built out over several years, so that projects given approval in the late 1980's may not be completed until the 1990's.)

In addition to already approved projects, buildout of the remaining vacant lands which are planned for urban development under this plan is expected to account for another 95,000 residents.

As indicated in Table III-1, approximately 48,600 housing units have been built or have been approved for development by the cities and the County since 1985, which corresponds to the increase of 127,000 residents noted above. This plan anticipates that 75,600 additional homes could be constructed.

It should be noted that the relationship between the projected increases in population and housing units under the plan appear to be confusing. This is due to the influence of a significant projected decrease in average household size within the existing housing stock of the County.

In terms of growth within the eighteen incorporated cities, this General Plan basically accepts the land use policies of the cities' plans, with some slight modifications to fit existing land use densities into the County's plan categories. Within the adopted "Spheres of Influence" boundaries around each of the cities, this plan generally conforms to city policies.

Table III-1

**Summary of Draft General Plan
for Contra Costa County**

	<u>Existing 1985 Land Use</u>	<u>Built & Approved Projects</u>	<u>Sub-total (col. 1+2)</u>	<u>GP Buildout</u>	<u>Sub-total (col. 3+4)</u>	<u>ABAG 2005</u>
Population	709,100	126,500	835,600	95,300	930,900	901,000 (1)
Housing Units (2)	278,300	48,600	326,900	75,600	402,500	385,200
Households	266,300	45,100	311,300	72,000	383,300	366,900 (1)
Jobs	230,800	67,300	298,100	83,700	381,800 (3)	379,400
Employed Residents	346,300	62,700	409,000	108,000	517,000	493,400
Jobs/Housing Ratio	0.67	---	0.73	---	0.74	0.77

Source: Contra Costa County Community Development Department
Comprehensive General Plan Review Program (November, 1988)

- Notes: (1) Association of Bay Area Governments (ABAG) projections for the year 2005 (Projections '87). These 1987 projections will be revised significantly upwards in the 1989 series. Preliminary ABAG projections indicate a 2005 population for the county of 925,300, with 375,800 households.
- (2) Housing units equal the number of households plus a vacancy rate. A 5% vacancy rate has been assumed.
- (3) Full buildout of job-generating land uses is not presumed to occur during the period of the plan (see text).

The plan will allow a significant amount of new housing development in the unincorporated Oakley area, and smaller amounts of "in-fill" development in unincorporated West Pittsburg, Alamo, El Sobrante, Saranap, and other smaller unincorporated places. In North Richmond, hundreds of acres of vacant industrial land are expected to be developed or redeveloped during and after the planning period, as completion of a major flood control and freeway project makes the area more attractive to investors. This plan continues the policies of the Pleasant Hill BART Station Specific Plan, which allows high density commercial and residential development in that unincorporated area.

Much of the future growth in the County is planned for the Pittsburg-Antioch and other areas of East Contra Costa, and, to a lesser extent, in the San Ramon Valley (see Table III-2). Over 12,000 new housing units are expected in the Pittsburg-Antioch area, in addition to a similar number of units that are already under construction or have been recently approved by the Cities of Antioch and Pittsburg.

The remainder of East County (called "Other East County" in Table III-2) includes the unincorporated Oakley, Bethel Island, and Discovery Bay communities, as well as the City of Brentwood. In this area approximately 29,000 homes are planned, which will result in a population increase of about 65,000 people. The General Plan calls for significant growth in the Oakley area south of Laurel Road, and also recognizes the growth projected by the City of Brentwood plan for area within their Sphere of Influence.

While residential growth has been very strong in the central portion of the County through the 1980's, many of the cities along the I-680 corridor are now reaching "buildout," as the last remaining lands are developed. During the course of the General Plan, the populous North Central area (between Walnut Creek and Martinez) is expected to actually lose population, as is West County, due to the decreasing average household size (see Table III-2). However, housing growth will continue in both areas, as approximately 10,000 units are added in the North Central area and approximately 9,000 units are built in West County.

Very large residential projects that were approved in the San Ramon, Danville, and Blackhawk areas of the San Ramon Valley during the early 1980's are expected to build out through the mid-1990's, after which the growth rate will decline significantly. Vacant land that is planned for development in the valley is expected to add another 9,000 housing units during the planning period. The plan indicates no further urban expansion in the unincorporated Tassajara area to the east and south of the final phase of the Blackhawk community, although the Dougherty Valley is designated as a "Priority General Plan Amendment Area" (see discussion at end of this chapter: Local Plan Policies).

In terms of future commercial and industrial growth, the General Plan is expected to result in the creation of approximately 84,000 new jobs over the next twenty years, compared to an increase in the number of workers in the County ("employed residents") of about 108,000.

It should be noted that the job projections included in Tables III-1 and III-2 assume that only a portion of the vacant lands planned for commercial or industrial uses will be developed during the planning period. The General Plan projections assume that market constraints and other factors will limit the amount of commercial and industrial development that is planned in the fast

Table III-2

**Summary of Draft General Plan
by Sub-Areas of Contra Costa County**

	POPULATION		HOUSEHOLDS		EMPLOYMENT	
	<u>Existing & Approved</u>	<u>GP Buildout</u>	<u>Existing & Approved</u>	<u>GP Buildout</u>	<u>Existing & Approved</u>	<u>GP Buildout</u>
West County	214,586	211,331	81,614	89,980	60,335	86,043
North Central	276,801	272,893	110,685	119,908	143,964	161,400
Lamorinda	53,373	55,968	19,782	23,385	12,257	14,599
San Ramon Valley	112,059	126,644	36,399	46,966	52,495	66,042
Pittsburg-Antioch	137,370	157,668	47,698	60,158	25,843	43,062
Other East County(1)	41,409	106,360	15,156	42,930	3,216	10,645
TOTAL	835,598	930,864	311,334	383,327	298,110	381,791

Source: Contra Costa County Community Development Department
Comprehensive General Plan Review Program (November, 1988)

Note: (1) "Other East County" includes Oakley, Bethel Island,
Knightsen, the City of Brentwood, Byron, and Discovery Bay.

growing East Contra Costa area. Thus, some of the job growth is not expected until after the twenty year planning period, during the second or third decades of the next century.

Table III-3 summarizes the changes in average household size which are anticipated during the planning period. As the table indicates, household sizes currently range from a low of 2.63 residents per average household in West County to a high of over 3.00 persons per household in the San Ramon Valley.

In each sub-area of the County, household size is expected to decrease significantly over the next twenty years as the General Plan is built out. The overall household size throughout the County is now 2.68 persons per home; by the next century that average is anticipated to shrink to 2.43. The average household sizes assumed in the General Plan are based upon the most recent projections prepared by the Association of Bay Area Governments (Projections '87).

Table III-3
Projected Changes in Household Size
by Sub-Areas of Contra Costa County

	<u>1985</u>	Buildout of the GP <u>(2005)</u>
West County	2.62	2.35
North Central	2.51	2.28
Lamorinda	2.69	2.39
San Ramon Valley	3.05	2.70
Pittsburg-Antioch	2.86	2.62
Other East County	2.77	2.48
COUNTY	2.66	2.43

Source: Contra Costa County Community Development Department,
General Plan Review Program; ABAG, Projections '87.

"Jobs/Housing Ratio" Versus "Jobs/Housing Balance"

The "jobs/housing ratio" of a particular area is a measure of the match between local employment opportunities and the availability of housing. The most generally accepted method of calculating the ratio is to compare the number of jobs and the number of employed residents, not the number of housing units, since the average number of workers per household varies from one area to another. However, the "jobs/housing ratio" calculation does not take into account the relative affordability of local housing opportunities.

While an area's "jobs/housing ratio" is a quantitatively defined statistic, the term "jobs/housing balance" represents a qualitative planning goal. A jobs/housing balance occurs if people live in housing that is affordable at the wages they earn, and travel reasonably short distance to their jobs and the services they use.

Having the same number of jobs and employed residents in an area, while usually a worthy goal, does not necessarily mean that a jobs/housing balance, as defined above, will be achieved. If, for example a community creates low-wage jobs equal to the number of current employed residents a jobs/housing balance of 1.00 may be reached. But if the current housing stock is expensive and can be afforded only by those who commute to higher-paying jobs in other communities, and if the holders of low wage jobs are unable to afford housing close to their jobs and must commute lengthy distances, then a jobs/housing balance has not been achieved. Planning for a jobs/housing balance is not just a mathematical exercise, but rather requires a more thorough analysis, both quantitatively and qualitatively, of commute behavior, employment opportunities by occupation and wage, housing needs by income type, and the rate of both job and housing growth.

Contra Costa County developed during the pre- and post-World War II years as primarily a series of "bedroom" communities which serve the employment centers of San Francisco and Oakland-Berkeley. Because of the County's regional role as a provider of suburban housing, the ratio of jobs to housing (or employed residents) has traditionally been the lowest of all of the nine counties in the Bay Area.

The ratio of jobs to employed residents in Contra Costa was 0.67 in 1985, which means there were about two jobs in the County for every three resident workers (see Table III-4). However, when all the development projects that have been approved since 1985 by the nineteen jurisdictions in the County are built, the jobs/housing ratio will increase to about 0.73. However, the ratio varies widely among the sub-areas of the County, from a low of only 0.17 jobs for each employed resident in the rural East County area to a near perfect match of jobs and workers in North Central County (0.99).

As Table III-4 indicates, the growth policies of this General Plan will not significantly change the Countywide ratio between jobs and housing. Over the next twenty years, the jobs/housing ratio is expected to reach approximately 0.74 jobs per employed resident, only a slight improvement over the ratio for the existing land use plus approved projects. In most areas of the County, recent and projected job growth will be matched by an equal amount of housing growth, so the ratio will remain roughly the same.

Table III-4
Projected Changes in the
Jobs/Housing Ratio for
Sub-Areas of Contra Costa County

	<u>1985</u>	<u>1985 and Approved Projects</u>	<u>Buildout of the GP¹ (2005)</u>
West County	0.66	0.61	0.77
North Central	0.82	0.99	1.00
Lamorinda	0.44	0.43	0.43
San Ramon Valley	0.61	0.93	0.91
Pittsburg-Antioch	0.53	0.43	0.51
Other East County	0.26	0.17	0.20
COUNTY	0.67	0.73	0.74

Source: Contra Costa County Community Development Department,
General Plan Review Program; ABAG, Projections '87.

Note: (1) Some job generating land uses in the plan
are not expected to build out until after 2005.

The jobs/housing ratio under the buildout of the General Plan will become "better" in West County as more jobs than homes are created, and will become stabilized in Central County. But in the fastest growing areas of Pittsburg-Antioch and the remainder of East County, so much new housing is planned that employment will continue to lag far behind. For every new job created in the Pittsburg-Antioch area, two new workers are expected to move in, although the jobs/housing ratio will increase somewhat from 0.43 (existing plus approved) to 0.51 (year 2005). However, the lopsided jobs/housing ratio in the East County communities of Oakley, Brentwood, and Discovery Bay will continue through the early years of the next century, with only one local job expected for each five new employed residents.

The projected jobs/housing ratio in eastern Contra Costa County should become ameliorated, however, during the decades beyond the twenty year planning period of this General Plan. Based upon the market-driven construction trends in other parts of the County and region, the pattern of development in rural areas begins with the construction of suburban housing. As the influx of new residents creates the demand for new services, retail and other businesses follow the growing population base, although there can be a lag of five years or more between the construction of new housing and the creation of local jobs. This phenomenon occurred in the San Ramon Valley: the period of rapid suburbanization during the 1970's and early 1980's has been followed by the location of numerous local and regional businesses in the valley during the 1980's.

As noted previously, this jobs/housing analysis assumes that some of the job-generating land uses in the County and cities' General Plans (the vacant land that is planned for commercial and industrial growth) will not be developed during the next twenty years, because there is too much of this type of land (especially in East County) set aside for the market to absorb during that period.

Land Use Goals

The following broad goals form the basis from which the County's land use policies and implementation measures, presented later in this chapter, are derived. In the following goals and policies note that when the word "urban" is employed, as in the phrase "urban development" and "urban uses," the broad definition of the word is intended. The broad definition of the word that is intended here is in contrast to the more specific use of the word "urban" in the growth management program, which is included in Chapter IV. The terms "urban," "rural," "suburban," etc. that are used in the context of specific growth management standards or levels of service in Chapter IV are defined separately at the end of that chapter.

- 3-A. To coordinate land use with circulation, development of other infrastructure facilities, and protection of agriculture and open space, and to allow growth and the maintenance of the County's quality of life. In such an environment all residential, commercial, industrial, recreational and agricultural activities may take place in safety, harmony, and to mutual advantage.
- 3-B. To provide opportunities for increasing the participation of Contra Costa County in the economic and cultural growth of the region, and to contribute to, as well as benefit from, the continued growth in importance of the Bay Region and the State of California.
- 3-C. To encourage aesthetically and functionally compatible development which reinforces the physical character and desired images of the County.
- 3-D. To provide for a range and distribution of land uses that serve all social and economic segments of the County and its subregions.

- 3-E. To recognize and support existing land use densities in most communities, while encouraging higher densities in appropriate areas, such as near major transportation hubs and job centers.
- 3-F. To permit urban development only in locations of the County where public service delivery systems that meet applicable performance standards are provided or committed.
- 3-G. To discourage development on vacant rural lands outside of planned urban areas which is not related to agriculture, mineral extraction, wind energy or other appropriate rural uses; and to discourage subdivision down to minimum parcel size of rural lands that are within, or accessible only through, geologically unstable areas.
- 3-H. To adopt and implement an innovative Countywide growth management program which effectively links land use policy with transportation and other infrastructure improvements.
- 3-I. To coordinate effectively the land use policies of the County General Plan with those plans adopted by the cities and special service districts.
- 3-J. To encourage a development pattern that promotes the individuality and unique character of each community in the County.
- 3-K. To develop a balance between job availability and housing availability with consideration given to wage levels, commute distance and housing affordability. The individual characteristics of the several subregions of the County and their interaction with other regions shall be considered when establishing criteria for delivering that balance.

Land Use Policies

The following are broad, Countywide policies which apply to all properties. More detailed development policies for specific areas in the County are found in the "Local Plan Policies" section at the end of this chapter.

Jobs/Housing Balance

- 3-1. Housing infill shall be supported and stimulated where the jobs/housing ratio shows an overabundance of jobs to housing.
- 3-2. Job infill shall be supported and stimulated where the jobs/housing ratio shows an overabundance of housing to jobs.
- 3-3. Areas experiencing rapid urban growth shall be developed so as to provide a balance of new residential and employment opportunities.
- 3-4. Financing mechanisms shall be developed which spread the costs of facilitating jobs/housing balance between existing and new development.

Growth Management and Community Boundaries

- 3-5. New development within unincorporated areas of the County shall not be approved unless growth management standards and criteria are met, or can be assured of being met prior to issuance of building permits.
- 3-6. Development of all urban uses shall be coordinated with provision of essential community services and facilities including, but not limited to, roads, law enforcement and fire protection services, schools, parks, sanitary facilities, water and flood control.
- 3-7. Firm policies regarding the extent and phasing of urban expansion shall be enforced, consistent with the growth management standards adopted in this plan. The location and extent of growth shall be guided through capital improvements programming and financing (i.e. a capital improvement program, assessment districts, impact fees, and developer contributions) to prevent infrastructure, facility and service deficiencies.
- 3-8. Infilling of already developed areas shall be encouraged. Proposals that would prematurely extend development into areas lacking requisite services, facilities and infrastructure shall be opposed. In accommodating new development, preference shall be given to vacant or under-used sites within urbanized areas, which have necessary utilities installed with available remaining capacity, before undeveloped suburban lands are utilized.
- 3-9. Areas not suitable for urban development because of the lack of availability of public facilities shall remain in their present use until the needed infrastructure is provided. Premature subdivision to lot sizes inconsistent with the densities allowed by the Land Use Element which inhibit full development of those densities shall be discouraged.
- 3-10. The extension of urban services into agricultural areas, especially growth-inducing infrastructure, shall be discouraged unless the area has been designated for urban development, and assuming that all appropriate criteria have been applied to allow the designation change.
- 3-11. Urban uses shall be expanded only in areas where conflicts with the agricultural economy will be minimal.
- 3-12. Areas to be excluded from consideration in designating areas for urban uses shall include publicly-owned parklands; watershed lands owned by water districts; major mineral extraction areas; major State and Federal land holdings currently developed with low-intensity uses; marshlands; existing major water areas; lands identified as significant ecological reserves; and lands identified as man-made or natural hazards.

Community Identity and Urban Design

- 3-13. The design of new buildings and the rehabilitation of existing buildings shall reflect and improve the existing character of the commercial districts in the County.
- 3-14. Community appearance shall be upgraded by encouraging redevelopment, where appropriate, to replace inappropriate uses.
- 3-15. Opportunities shall be provided for retaining, enhancing and diversifying the cultural activities available to the County.
- 3-16. Flexibility in the design of projects shall be encouraged in order to enhance scenic qualities and provide for a varied development pattern.
- 3-17. Buffers shall be provided between new industrial developments and residential areas by establishing setbacks, and park-like landscaping or other appropriate mechanisms.

Residential Uses

- 3-18. The predominantly single family character of substantially developed portions of the County shall be retained. Multiple-family housing shall be dispersed throughout the County and not concentrated in single locations. Multiple-family housing shall generally be located in proximity to facilities such as arterial roads, transit corridors, and shopping areas.
- 3-19. Housing opportunities for all income levels shall be created.
- 3-20. A diversity of living options shall be permitted while ensuring community compatibility and quality residential development.
- 3-21. Housing opportunities shall be improved through encouragement of distinct styles, desirable amenities, attractive design and enhancement of neighborhood identity.
- 3-22. Innovation in site planning and design of housing developments shall be encouraged in order to upgrade quality and efficiency of residential living arrangements and to protect the surrounding environment.
- 3-23. Efforts to maintain and rehabilitate existing dwelling units in established neighborhood areas shall be supported.
- 3-24. Existing residential neighborhoods shall be protected from incompatible land uses and traffic levels exceeding adopted service standards.
- 3-25. New residential development shall be accommodated only in areas where it will avoid creating severe adverse impacts upon the environment and upon the existing community.

- 3-26. New housing projects shall be located on stable and secure lands or shall be designed to mitigate adverse or potentially adverse conditions. Residential densities of conventional construction shall generally decrease as the slope increases.

Business and Employment Uses

- 3-27. A variety of appropriately-sized, well-located employment areas shall be planned in order that industrial and commercial activities can contribute to the continued economic welfare of the people of the County and to the stable economic and tax bases of the County and the various cities.
- 3-28. Employment centers in the County area shall be designed to be compatible with the nature of the surrounding area.
- 3-29. Commercial areas of appropriate size and location shall be provided to accommodate the needs of the present and anticipated population in each subregion or community of the County.
- 3-30. Well-defined commercial areas oriented to community shopping shall be provided in the County.
- 3-31. Local shopping facilities shall be distributed and spaced at intervals to accommodate the requirements of residential neighborhoods, minimize travel times, and reduce energy costs.
- 3-32. The limits of business areas shall be established, where practical, by the use of boundaries set by creeks, major roads, significant changes in topography, and other physical features in order to avoid conflicts and provide a buffer between commercial and nearby residential uses.
- 3-33. New areas of strip commercial development shall be discouraged except as provided in this plan. ("Strip commercial" shall be generally defined as commercial development of shallow depth limited to the parcels fronting on a street and extending in a linear manner for a considerable distance).
- 3-34. New local convenience shopping shall generally be located at the intersections of major streets and highways. Such uses shall be discouraged on more than two corners of an intersection.
- 3-35. Business and professional office development shall be encouraged in areas designated for commercial land use within shopping areas and where a transition or buffer use is appropriate between commercial and residential areas.
- 3-36. Existing employment areas shall be improved to create better pedestrian circulation, bicycle paths and adequate parking.
- 3-37. Adaptive reuse of structures (i.e. remodeling or upgrading original commercial and industrial buildings) shall be encouraged.

- 3-38. The continuing orderly development of research facilities, regional offices, and light industrial uses shall be encouraged in designated areas in order to improve the economic base and provide local employment.
- 3-39. Industrial development shall be concentrated in select locations adjacent to existing major transportation corridors and facilities.
- 3-40. Industrial employment centers shall be designed to be unobtrusive and harmonious with adjacent areas and development.
- 3-41. Industries which employ the skills of County residents shall be encouraged to locate within the County.
- 3-42. The development of agriculturally-related industries which will enhance the continued productivity of agriculture shall be encouraged.
- 3-43. Water-oriented recreation uses shall be permitted in East County provided that such development is compatible with the Delta's unique ecology.

Land Use Designations

Introduction

The following section describes the twenty-six land use designations which are used in this General Plan and on the accompanying Land Use Element map.

The plan differentiates between four different single family residential designations, and six multiple family designations. The single family categories range from a density of rural residences on five-acre lots up to 7.3 homes per net acre.

The plan's multiple family (usually attached housing) designations range from low density townhouses, condominiums or trailer homes at a density of over seven units per net acre up to very dense apartment projects that could contain up to 100 units per acre. (The "Very High-Special" designation which would allow 45 to 100 units per acre, is only applied in a limited number of locations within the cities, and is not represented in the unincorporated area.) A multiple family designation is also included to describe congregate care projects at defined densities (senior housing with some shared facilities).

The non-residential, job-generating land uses specified in this General Plan include eight designations:

- o two commercial (retail) designations which differentiate between regional- oriented, large-scale shopping malls and other lower-density retail centers;
- o two office designations that again differentiate between large-scale, master planned office parks (called "Business Park") and other office buildings or clusters of buildings ("Office");

- o two industrial categories that separate out "heavy" from "light" manufacturing and wholesaling processes;
- o a special category applied to marina and shoreline-oriented retail uses ("Commercial Recreation");
- o a "Mixed Use" category applied in only five specific areas of the County;
- o a "Public and Semi-Public" category; and
- o seven categories that differentiate between types of rural open space, parks, outdoor recreation, and agricultural-oriented uses.

Table III-5 lists the twenty-six General Plan land use designations and the densities that are associated with each. The designations are closely related to the density requirements defined in the County's Zoning Ordinance, and are continuous, without gaps, across the density range.

The densities of the General Plan's residential designations are defined in terms of housing units per net acre. Net acreage includes all land area used exclusively for residential purposes, and excludes streets, highways, and all other public rights-of-way. Net acreage for residential densities is assumed to constitute 75% of gross acreage for all uses, except for the Multiple Family designations, where it is assumed to comprise 80%. However, actual measurements used on an application may be based on analysis of the proposed development site plan.

When calculating the allowed density of a parcel, readers should keep in mind that unique environmental characteristics may justify a reduced number of units or intensity of use than normally allowed under the General Plan designation. Notwithstanding this caveat, one single family residential unit is allowed on any existing, legally created lot designated in all residential and open space categories. Variances from the minimum lot size and dimensional requirements can be considered based on state law.

The commercial and industrial General Plan categories are defined in terms of "floor area ratio." The floor area ratio is calculated by dividing the square footage of a building by the square footage of the lot on which it is located. Thus, a structure composed of 10,000 square feet of space which is constructed on a 20,000 square foot lot has a floor area ratio ("FAR") of 0.5.

Table III-6 summarizes the relationship between the land use designations used in this General Plan, and the zoning districts defined in the County's current Zoning Ordinance. The table outlines which specific zoning districts are automatically consistent with each General Plan designation and which zoning might be considered consistent with the plan category, if certain findings are adopted by the decision-making body.

For example, R-6 and R-7 zoning districts (which require a minimum lot size for new housing units of 6,000 and 7,000 square feet, respectively) is automatically consistent with the General Plan category of "Single Family Residential-High Density," because the zoning falls within the density mandated by the plan designation (5.0 to 7.2 units per net acre).

TABLE III-5

**Summary of
General Plan Land Use
Designations**

<u>Abbreviation on Land Use Map</u>		<u>Units Per Net Acre*</u>
SINGLE FAMILY RESIDENTIAL		
SV	Very Low	0.2-0.9
SL	Low	1.0-2.9
SM	Medium	3.0-4.9
SH	High	5.0-7.2
MULTIPLE FAMILY RESIDENTIAL		
ML	Low	7.3-11.9
MM	Medium	12.0-20.9
MH	High	21.0-29.9
MV	Very High	30.0-44.9
MS	Very High-Special	45.0-99.9
CC	Congregate Care-Senior Housing	N/A
COMMERCIAL/INDUSTRIAL		
		<u>Floor Area Ratio**</u>
RC	Regional Commercial	(subject to city plans)
CO	Commercial	0.1 - 1.0
OF	Office	0.1 - 1.5
BP	Business Park	0.25 - 1.5
LI	Light Industry	0.25 - 0.67
HI	Heavy Industry	0.1 - 0.4
CR	Commercial Recreation	0.1 - 1.0
M1, etc.	Mixed Use (M1, M2, M3, etc.)	varies (see text)
OTHER		
PS	Public and Semi-Public	
OPEN SPACE		
PR	Parks and Recreation	
OS	Open Space	
AL	Agricultural Lands	
AC	Agricultural Core	
DR	Delta Recreation	
WA	Water	
WS	Watershed	

Notes: *Net acreage includes all land area used exclusively for residential purposes, and excludes streets, highways, and all other public rights-of-way. Net acreage is assumed to constitute 75% of gross acreage for all uses, except for the Multiple Family designations, where it is assumed to comprise 80%.

**Floor area ratio is calculated by dividing average building square footage by lot size.

The County's P-1 (Planned Unit) zoning district could be considered consistent with any of the General Plan designations. When considering standards referenced in Table III-4 and in the category definitions, the Planned Unit (P-1) District is intended to allow flexibility in the relationship of various buildings, structures, lot sizes, and open spaces while ensuring compliance with the General Plan and County codes and standards which protect public health, safety and the general welfare of the county. The County Planning Agency shall determine plan compliance to standards found in this plan, without exceeding the total density or intensity of the project site as a whole as specified in the General Plan.

The County Ordinance Code specifies a range of uses which are allowed by right or through the granting of a land use permit. A major implementation measure included in this plan calls for the County Ordinance Code to be reviewed and revised to ensure that the provisions of the code conform to the intent and spirit of the plan. Until that review is adopted, it is presumed that the uses allowed by the Ordinance Code are in technical conformity with this plan. However, as a matter of County policy, the staff reports prepared for all applications shall discuss whether the application complies with the spirit and intent of this updated General Plan. In instances where consistency between allowable uses under current zoning and the General Plan cannot clearly be determined (due to scope, scale or use), use permit applications shall either be denied or directed to apply for a General Plan Amendment.

Residential Uses

The General Plan map utilizes ten designations of residential use, four of which describe single family densities and six describe multiple family densities. The abbreviation in parentheses following the name of each land use designation is code used on the General Plan land use map to identify the areas so designated.

The residential categories are defined in terms of three measures, as follows:

- o housing units per net acre (excluding the area required for local streets and other public uses, which is assumed to consume approximately 25 percent of the gross residential area);
- o minimum net site area per unit (in square feet); and
- o the population density range (persons per net acre) which is associated with the category.

a. Single Family Residential-Very Low Density (SV).

This designation allows a maximum of less than one (up to 0.9) single family unit per net acre. Each unit requires at least 43,561 square feet of site area. No maximum site area per unit is defined. With an average of 2.5 persons per household, population density would normally range between one to three persons per acre.

Primary land uses which shall be permitted in this designation include detached single family homes and accessory structures, and the keeping of a

TABLE III-6

Consistency Between the General Plan
and the Zoning Ordinance

<u>General Plan Land Use Designation</u>	<u>Zoning Ordinance Districts (1)</u>	
	<u>Consistent</u>	<u>Could be Consistent (2)</u>
Single Family Residential		
-Very Low Density	R-40, R-65, R-100	P-1, all A districts
-Low Density	R-15, R-20, R-40	P-1, all A districts
-Medium Density	R-10, R-15	P-1, all A districts
-High Density	R-6, R-7, R-10, D-1	P-1, all A districts
Multiple Family Residential		
-Low Density	R-6, D-1, T-1, M-6, M-9	P-1
-Medium Density	T-1, M-9, M-12, M-17	P-1
-High Density	M-17, M-29	P-1
-Very High Density	M-29	P-1
-Very High Density-Special	P-1	
-Congregate Care-Senior Housing	P-1	
Regional Commercial	C, O-1	P-1, R-B
Commercial	C, C-B, R-B, N-B,	P-1
Office	O-1, A-0	P-1
Business Park	C-M, A-0	C, P-1
Light Industry	L-I	C, P-1
Heavy Industry	L-I, H-I, W-3	C, P-1
Commercial Recreation	(3)	C, C-B, N-B, R-B, P-1
Mixed Use	-----	all R, all M, all C and O, LI, P-1

TABLE III-6
(continued)

<u>General Plan Land Use Designation</u>	<u>Zoning Ordinance Districts (1)</u>	
	<u>Consistent</u>	<u>Could be Consistent (2)</u>
Public and Semi-Public		all
Parks and Recreation	all A districts	all
Open Space	all A districts	P-1
Agricultural Lands	all A districts	P-1
Agricultural Core	all A districts (except A-2)	P-1
Delta Recreation	A-20, A-40, A-80	P-1
Water		P-1
Watershed	all A districts	P-1

Notes:

- (1) This inventory presumes that four antiquated zoning districts will be deleted from the County Zoning Ordinance: F-R (Forestry-Recreation); U (Unrestricted); F-1 (Water Recreational); and A-1 (Light Agriculture).
- (2) The zoning districts listed under the "Could be Consistent" column could be considered consistent with the General Plan designation under certain circumstances, depending upon the specific use that was being proposed.
- (3) A new district should be added to the Zoning Ordinance which would allow commercial uses specifically related to waterfront areas.

limited number of livestock, consistent with a rural lifestyle. Secondary uses generally considered ~~found~~ to be compatible with very low density homes may be allowed, including home occupations, small residential care facilities, ~~small / religious / facilities~~ churches, secondary dwelling units and other uses and structures incidental to the primary uses.

b. Single Family Residential-Low Density (SL).

This designation allows a range of 1.0 and 2.9 single family units per net acre. Minimum site area per unit in this designation is 14,520 square feet, and can be as large as 43,560 square feet. Unique environmental characteristics of a parcel may justify larger lot sizes. With an average of 2.5 persons per household, population densities would normally range from about two to about 7.5 persons per acre.

Primary land uses which shall be permitted in this designation include detached single family homes and accessory structures. Secondary uses generally considered ~~found~~ to be compatible with very low density homes may be allowed, including home occupations, small residential care facilities, ~~small / religious / facilities~~ churches, secondary dwelling units and other uses and structures incidental to the primary uses.

c. Single Family Residential-Medium Density (SM).

This designation allows between 3.0 and 4.9 single family units per net acre. Minimum site area per unit in this designation is 8,730 square feet, and can range up to 14,519 square feet. With an average of 2.5 persons per household, population densities would normally range from about 7.5 to about 12.5 persons per acre.

Primary and secondary land uses which shall be permitted in this category are the same as above in (b).

d. Single Family Residential-High Density (SH).

This designation allows between 5.0 and 7.2 single family units per net acre. Minimum site area per unit in this designation is 6,000 square feet, and can range up to 8,729 square feet. With an average of 2.5 to 3 persons per household, population densities would normally range from about 12.5 to about 22 persons per acre.

Primary and secondary land uses which shall be permitted in the Single Family Residential-High Density designation are the same as above in (b). In addition, in specified areas of the County with conventional zoning, attached single family units (duplexes or duets) may be allowed.

e. Multiple Family Residential-Low Density (ML).

This designation allows between 7.3 and 11.9 multiple family units per net acre. Minimum site area per unit in this designation is 3,350 square feet, and can range up to 5,999 square feet. With an average of 2.5 persons per

unit, population densities would normally range between about 18.5 to about 30 persons per acre.

Primary land uses shall include attached single family residences (such as duplexes or duets), multiple family residences such as condominiums, townhouses, apartments, mobile home parks, and accessory structures normally auxiliary to the primary uses. Secondary land uses which do not conflict with primary uses may be allowed, including second dwelling units, home occupations, and group care facilities.

f. Multiple Family Residential-Medium Density (MM).

This designation allows between 12.0 and 21.9 multiple family units per net acre. Minimum site area per unit in this designation is 1,980 square feet, and can range up to 3,349 square feet. With an average of 2.5 persons per unit, population densities would normally range between about 30 to about 55 persons per acre.

Primary and secondary land uses permitted in this designation are the same as in (e) above, with the exclusion of attached single family residences.

g. Multiple Family Residential-High Density (MH).

This designation allows between 22.0 and 29.9 multiple family units per net acre. Minimum site area per unit in this designation is 1,452 square feet, and can range up to 1,979 square feet. With an average of 2.5 persons per unit, population densities would normally range from about 55 to about 75 persons per acre.

Primary and secondary land uses permitted in the designation are the same as in (f) above.

h. Multiple Family Residential-Very High Density (MV).

This designation allows between 30.0 and 44.9 multiple family units per net acre. Minimum site area per unit in this designation is 968 square feet, and can range up to 1,451 square feet. With an assumed average of 2 persons per unit, population densities would normally range from about 60 to about 90 persons per acre.

Primary land uses shall include multiple family residences such as condominiums, apartments, and accessory structures normally auxiliary to the primary uses. Secondary land uses which do not conflict with primary uses may be allowed, including second dwelling units, home occupations, and group care facilities.

i. Multiple Family Residential-Very High Special Density (MS).

This designation allows between 45.0 and 99.9 multiple family units per net acre. Minimum site area per unit in this designation is 435 square feet, and can range up to 967 square feet. With an average of 2.0 persons per

unit, population densities would normally range from about 90 to about 200 persons per acre.

Primary land uses shall include multiple family residences such as condominiums, apartments, and accessory structures normally auxiliary to the primary uses. Secondary land uses which do not conflict with primary uses may be allowed, including second dwelling units, home occupations, and group care facilities.

j. Multiple Family Residential-Congregate Care (CC).

The density and uses allowed in this General Plan designation are limited specifically to those outlined in the text of the individual plan amendments that are adopted for these uses.

Commercial/Office/Industrial Uses

This General Plan designates eight non-residential, job-generating land use activities. The designations are described in terms of uses allowed; the maximum coverage that a building may occupy on the parcel; the maximum floor area ratio; and the average number of employees per gross acre that could be expected.

a. Commercial (CO).

This designation allows for a broad range of commercial uses typically found in smaller scale neighborhood, community and thoroughfare commercial districts, including retail and personal service facilities, limited office and financial uses. The following standards shall apply to uses in this designation:

- | | |
|---------------------------------------|---------------|
| (1) maximum site coverage: | 40 percent |
| (2) maximum building height: | 35 feet |
| (3) maximum floor area ratio: | 1.0 |
| (4) average employees per gross acre: | 160 employees |

b. Regional Commercial (RC).

This designation allows large centers of commercial land use concentrations, including regional shopping malls and similar uses, with retail, personal service, financial and associated facilities, and hospitals. There are no regional commercial areas within the incorporated County. The standards which apply to these areas are outlined in the respective city General Plans and zoning ordinances:

- | | |
|---------------------------------------|-------------------------|
| (1) maximum site coverage: | (subject to city plans) |
| (2) maximum building height: | (subject to city plans) |
| (3) maximum floor area ratio: | (subject to city plans) |
| (4) average employees per gross acre: | (subject to city plans) |

c. Commercial Recreation (CR).

This designation allows a range of privately operated recreational uses of a commercial character, including marinas and similar facilities, campgrounds, golf courses, outdoor sports and athletic complexes. The following standards apply to these areas:

- (1) maximum site coverage: 40 percent
- (2) maximum building height: 35 feet
- (3) maximum floor area ratio: 1.0
- (4) average employees per gross acre: 15 employees

d. Office (OF).

This designation allows office facilities of an administrative character including branch and head offices, multi-tenant structures and similar uses, and medical offices. The following standards apply:

- (1) maximum site coverage: 40 percent
- (2) maximum building height: 50 feet
- (3) maximum floor area ratio: 1.5
- (4) average employees per gross acre: 100 employees

e. Business Park (BP).

This designation allows a mix of commercial, office, and light industrial uses which, by the high quality of their development and the nature of their operations, demonstrate compatibility with adjacent commercial and residential uses. In addition, smaller commercial establishments which serve on-site employees such as business services and local-serving retail uses are allowed. Adherence to landscaping, buffering and design standards provide the means for achieving a high level of amenity for employees and neighboring uses. The following standards apply:

- (1) maximum site coverage: 40 percent
- (2) maximum building height: 60 feet
- (3) maximum floor area ratio: 1.5
- (4) average employees per gross acre: 100 employees

f. Light Industry (LI).

This designation allows light industrial activities such as processing, packaging, machinery repair, fabricating, distribution, warehousing and storage, research and development, and similar uses which emit only limited amounts of smoke, noise, light, or pollutants. The following standards apply:

- (1) maximum site coverage: 50 percent
- (2) maximum building height: 50 feet
- (3) maximum floor area ratio: 0.67
- (4) average employees per gross acre: 60 employees

g. Heavy Industry (HI).

This designation allows activities requiring large areas of land with convenient truck and rail access. These uses are typically not compatible with residential uses in close proximity and the operations conducted may be characterized by noise or other conditions requiring spatial separation. Uses may include metal working, chemical or petroleum product processing and refining, heavy equipment operation and similar activities. Light industrial warehousing uses are also allowed. The following standards apply:

- (1) maximum site coverage: 30 percent
- (2) maximum building height: 40 feet
- (3) maximum floor area ratio: 0.67
- (4) average employees per gross acre: 45 employees

Mixed Uses

This General Plan utilizes a "Mixed Use" land use designation (abbreviated "M1", "M2", etc.) in the following unincorporated locations: along Parker Avenue in Rodeo (designated on the General Plan Map as M1); at the Pleasant Hill BART station (M3); along the Willow Pass Road Corridor in West Pittsburg (M5); and within a number of cities (e.g. the mixed use designation in downtown Pleasant Hill (M2)). The Mixed Use designations employed in the unincorporated areas are described below. More detailed policies which apply to development in these areas are included in Chapter IV (Local Plan Policies).

a. Mixed Use-Downtown Rodeo (M1).

The Parker Avenue Mixed Use district in Rodeo (M1 on the Land Use map) represents the revival of a once common concept: the placement of residential units over street level businesses. This designation applies to properties along a portion of Parker Avenue, and behind them along the flood control channel. Due to the limited frontage dimensions of existing parcels, it will be necessary to consolidate properties to create at least 100 feet of continuous frontage on Parker Avenue as a prerequisite for retail or office uses in this area. Without such consolidation, parcels will be restricted to multiple family residential uses in the high density residential ranges.

Additional development guidelines that are to be applied to projects proposed in this area are included under the "Policies for the Rodeo Area" in Chapter IV.

b. Mixed Use-Pleasant Hill Redevelopment Area (M2).

This use is described in plans adopted by the City of Pleasant Hill.

c. Mixed Use: Pleasant Hill BART (M3).

The Pleasant Hill BART station Mixed Use District (M3 on the Land Use map) applies to three sub-areas defined by the Pleasant Hill BART Station Specific Plan. The mixed use areas are located generally south of Las Juntas Way.

The purpose of the mixed use designation is to provide for the intergation in a single project of both residential and commercial/office uses. In the mixed use category housing is specifically permitted but not required.

Specific development guidelines for these areas are included in the "Policies for the Pleasant Hill BART Station Area" section in Chapter IV.

d. Mixed Use-Walnut Creek Core Area (M4).

This use is described in plans adopted by the City of Walnut Creek.

e. Mixed Use-West Pittsburg (M5).

The Willow Pass Road Mixed Use Corridor designation ("M5" on the Land Use map) has been applied to many properties on either side of Willow Pass Road. A range of neighborhood shopping, residential, and office uses are permitted in this designation to stimulate the upgrading and redevelopment of properties. Development guidelines that are to be applied to projects proposed in this area are included under the "Policies for the West Pittsburg Area" section in Chapter IV.

f. Mixed Use-Downtown Clayton (M6).

This use is described in plans adopted by the City of Clayton.

g. Mixed Use-Wood Ranch (M7).

The mixed use area on the former Wood Ranch property in the Sycamore Valley, within the Town of Danville, is described in plans adopted by that city.

Public and Open Space Uses

A total of eight land use designations have been defined for these uses. These include open space, agricultural, and recreational uses, as well as public/semi-public uses such as schools, public offices, highways and major flood control rights-of-way, and railroads.

a. Public and Semi-Public.

As the title implies, the "Public and Semi-Public" designation includes all properties owned by public governmental agencies such as libraries, fire stations, schools, etc. This designation is also applied to public transportation corridors (freeways, highways, and BART), as well as privately owned transportation and utility corridors such as railroads, PG&E lines, and pipelines. The largest properties in this category are those of the U.S. Naval Weapons Station in Concord and Port Chicago.

A wide variety of public and private uses are allowed by this General Plan category. However, the construction of private residences or private commercial uses, and the subdivision of land, is not considered compatible with this designation.

b. Agricultural Lands.

This land use designation includes most of the privately owned rural lands in the County, excluding private lands that are composed of prime soils or lands that are located in or near the Delta. Most of these lands are in hilly portions of the County and are used for grazing livestock, or dry grain farming. The category also includes non-prime agricultural lands in flat East County areas, such as outside Oakley, which are planted in orchards. Some of the Agricultural Lands east of Oakley and Byron are included in the 100-year flood plain, as mapped by the Federal Emergency Management Agency (FEMA).

The purpose of the Agricultural Lands designation is to preserve and protect lands capable of and generally used for the production of food, fiber, and plant materials. The title is intended to be descriptive of the predominant land-extensive agricultural uses that take place in these areas, but the land use title or description shall not be used to exclude or limit other types of agricultural or open space uses, except as noted below in the descriptions of "Agricultural Core," "Delta Recreation and Resources," "Watershed," "Parks and Recreation," and "Open Space."

The uses that are allowed in the Agricultural Lands designation include all land-dependent and non-land dependent agricultural production and related activities. In addition, the following uses may be allowed by issuance of a land use permit, which shall include conditions of approval that mitigate the impacts of the use upon nearby agricultural operations through the establishment of buffer areas and other techniques:

- o facilities for processing agricultural products produced in the County such as dairies, rendering plants, and feed mills;
- o commercial agricultural support services which are ancillary to the agricultural use of a parcel, such as veterinarians, feed stores, and equipment repair and welding; and
- o small-scale visitor serving uses including small tasting rooms, stands for the sale of products grown or processed on the property, guest or "dude" ranches, horse training and boarding ranches, improved campgrounds, and "bed and breakfast" inns of five or fewer bedrooms which are on lots of 20 acres or more.

The following standards shall apply to residential and non-residential uses allowed in the Agricultural Lands designation:

- (1) The maximum permitted residential density shall be one unit per five acres, except as noted below in (2);

- (2) Any subdivision of lands shall include conditions of approval which conform with the requirements of the "Ranchette Policy," which is outlined in the "Agricultural Resources" section of the Open Space/Conservation Element (Chapter VIII); and
- (3) Residential and non-residential uses proposed in areas of special flood hazards, as shown on FEMA maps, shall conform to the requirements of the County Floodplain Management Ordinance (County Ord. #87-45) and the further requirements outlined in the "Delta Recreation" section (d) (5) below.

c. Agricultural Core.

This designation applies to agricultural lands that are composed primarily of prime (class I or II) soils, considered the very best soils for farming a wide variety of crops. Lands designated as Agricultural Core are located in East County to the east, south, and west of the City of Brentwood. Much of the land in this designation is under active cultivation of intensive row crops, such as tomatoes and other vegetables. A portion of the Agricultural Core lands are included within the 100 year flood zone, as identified by FEMA.

The purpose of the Agricultural Core designation is to preserve and protect the farmlands of the County which are the most capable of, and generally used for, the production of food, fiber, and plant materials. Agricultural operations in the Agricultural Core shall be protected by requiring a higher minimum parcel size than the Agricultural Lands designation, to attempt to maintain economically feasible, commercial agricultural units. The creation of small uneconomical units will be discouraged by land use controls and by specifically discouraging minor subdivisions and "ranchette" housing development.

The uses that are allowed in the Agricultural Core designation are the same as those allowed, without the issuance of a land use permit, in the Agricultural Lands designation, specified above. However, none of the uses described as conditional uses in the Agricultural lands designation are considered appropriate in the Agricultural Core designation.

Residential uses are allowed in the Agricultural Core according to the following standards:

- (1) The maximum permitted residential density shall be one unit per ten acres;
- (2) Subdivision of land which would create a cluster of "ranchette" housing are inconsistent with this plan;
- (3) Any subdivision of lands shall include conditions of approval which conform with the requirements of the "Ranchette Policy," which is outlined in the "Agricultural Resources" section of the Open Space/Conservation Element (Chapter VIII); and

- (4) Residential and non-residential uses proposed in areas of special flood hazards, as shown on FEMA maps, shall conform to the requirements of the County Floodplain Management Ordinance (County Ord. #87-45) and the further requirements outlined in the "Delta Recreation and Resources" section (d) (5) below.

d. Delta Recreation and Resources.

This land use designation encompasses the islands and adjacent lowlands of the San Joaquin-Sacramento Delta, excluding Bethel Island and the community of Discovery Bay. Most of the lands designated Delta Recreation and Resources are within the 100 year flood plain mapped by the U.S. Federal Emergency Management Agency (FEMA), which means that the area is subjected to periodic flooding. Many of the Delta islands, and the tracts adjacent to the Delta, are currently in agricultural production of dry grains and other special crops suited to the soils and climate, such as asparagus. There are limited public water or sewer services currently available to the area.

The serious flooding danger in the area is due to the possibility that bay and river waters will overtop the existing levees during periods of storms or other high water, as well as the possibility that portions of the earthen levees may fail entirely during storms or earthquakes, resulting in the inundation of whole islands or tracts. The flooding danger is exacerbated by the effects of subsidence (sinking of Delta islands) and the rising of global sea waters caused by the "greenhouse effect." In recent years, during 1973, 1980, 1983, and 1986 one or more Delta island levees failed or were overtopped, and some of these were summer breaks that did not occur at a time of high storm runoff. Some islands in the Delta have been flooded two or three times since 1980.

Additionally, lands within this designation include areas of valuable wildlife habitat, some of which support species of economic value to the County and the State. These areas are an important component of the Pacific Flyway, a major waterfowl migration route in North America.

Public preservation of portions of these resources is encouraged by this plan. Private utilization of the resources for hunting and fishing is appropriate, if the activities do not harm the long term resource value of the Delta.

Due to their proximity to the Delta waterways, these lands have potential recreational value. The purpose of the Delta Recreation and Resources designation is to balance the recreational opportunities of the area against the need to allow only low intensity uses which will not subject large numbers of residents or visitors to flood dangers. Agriculture and wildlife habitat is to be considered the most appropriate uses in the area, with limited recreation uses allowed which do not conflict with the predominant agricultural and habitat uses.

The primary uses that are allowed in the Delta Recreation and Resources designation are those agricultural production and processing activities allowed in the Agricultural Lands designation, listed in section (b) above.

Additional uses that may be allowed through the issuance of a land use permit include: marinas, shooting ranges, duck and other hunting clubs, campgrounds, and other outdoor recreation complexes.

Conditional uses allowed in the Delta Recreation and Resources designation shall be limited to those low- to medium-intensity establishments that do not rely on urban levels of service, i.e. a public water or sewer system, and which will not draw large concentrations of people to floodprone areas. Uses allowed within areas designated for Delta Recreation and Resources shall be subject to the following standards:

- (1) the maximum permitted residential density shall be one unit per twenty acres;
- (2) all recreational uses shall be accessible by a County maintained road;
- (3) any subdivision of lands shall include conditions of approval which conform with the requirements of the "Ranchette Policy," which is outlined in the "Agricultural Resources" section of the Open Space/Conservation Element (Chapter VIII);
- (4) development shall not be permitted on lands designated by FEMA as flood-prone until a risk assessment and other technical studies have been prepared and have shown that the risk is acceptable;
- (5) all approved entitlements (land use permits, tentative, final, and parcel maps, development plan permits, and variances) and ministerial permits (building and grading permits) shall conform to the requirements of the Floodplain Management Ordinance (County Ord. #87-45), which are incorporated into this General Plan by reference; and
- (6) all entitlements shall include conditions of approval which require that a "floodprone area" notification statement be included in the deeds for all affected properties. The same notification statement shall be recorded on the face of all subdivision maps, along with the specific elevations that will be required of all new building pads and habitable floors.

e. Watershed.

Areas designated "Watershed" in this General Plan include much of land owned by the two major water suppliers in the County, the East Bay Municipal Utility District (EBMUD) and the Contra Costa Water District (CCWD). EBMUD property designated as "Watershed" surrounds the Lafayette, Briones, San Pablo, and Upper San Leandro Reservoirs (which are in a separate "Water" designation). Other EBMUD lands designated in this designation are located north and south of the Caldecott Tunnel and along Pinole Valley Road. CCWD lands placed in the "Watershed" designation category include properties acquired for the proposed Los Vaqueros reservoir in the southeastern portion of the County.

In order to safeguard the public water supplies stored in the reservoirs, only a very limited number of uses are allowed in "Watershed" areas. These uses include extensive agriculture, primarily grazing of livestock; intensive agriculture that does not rely upon pesticides or other chemical fertilizers, such as Christmas tree farming; passive, low intensity recreational uses such as hiking and biking, as well as small-scale commercial uses that support picnicing, boating, and fishing activities on the adjacent reservoirs.

f. Open Space.

This General Plan designation includes publicly owned, open space lands which are not designated as "Public and Semi-Public," "Watershed," or "Parks and Recreation." Lands designated "Open Space" include wetlands and tidelands adjacent to the mean high tide mark of the Bay, and other areas of significant ecological resources, or geologic hazards.

The "Open Space" designation also includes privately owned properties for which future development rights have been deeded to a public or private agency. For example, significant open space areas within planned unit developments identified as being owned and maintained by a homeowners association fall under this designation. Also included are the steep, unbuildable portions of approved subdivisions which may be deeded to agencies such as the East Bay Regional Park District, but which have not been developed as park facilities. Other privately owned lands have been designated as "Open Space" consistent with adopted city General Plans.

The most appropriate uses in "Open Space" areas involve resource management, such as maintaining critical marsh and other endangered habitats or establishing "safety zones" around identified geologic hazards. Other appropriate uses are low intensity, private recreation for nearby residents. Although there is no specified minimum parcel size in this "Open Space" designation, the subdivision of land which would allow the construction of urban structures is generally not considered compatible with this General Plan.

g. Parks and Recreation

The "Parks and Recreation" designation includes all publicly-owned city, district, County and regional parks facilities, as well as all golf courses, whether publicly or privately owned.

Appropriate uses in the designation are passive and active recreation-oriented activities, and ancillary commercial uses such as snack bars, and restaurants. The construction of new privately owned residences or commercial uses, and the subdivision of land, is inconsistent with this General Plan designation.

h. Water

This designation is applied to approximately 68 square miles of water in the San Francisco-San Pablo Bay and Sacramento-San Joaquin River estuary system which is within the County. The designation is also applied to all large inland bodies of water such as reservoirs.

Uses allowed in the "Water" designation area include transport facilities associated with adjacent heavy industrial plants, such as ports and wharves; and water-oriented recreation uses such as boating and fishing.

The construction of new residences or commercial uses and the subdivision of land is inconsistent with this General Plan designation.

Implementation Measures

The following specific measures should be implemented in order to carry out the land use goals and policies outlined in this chapter. The major implementation measure for this plan is a growth management program. The growth management program is described in the final section of this chapter.

Overall Measures

- 3-a. Revise the County Zoning Ordinance and other ordinances to conform with the land use designations included in this General Plan, e.g. delete the F-R, U, A-1, and F-1 zoning districts; create a new Commercial Recreation district.
- 3-b. During project review, require that proposed uses on the edges of land use designations be evaluated to ensure compatibility with adjacent planned uses.
- 3-c. Require the dedication of deeded development rights to the County for lands to be protected as open space.
- 3-d. Review proposed land development projects for consistency with land use designations and relevant policies and standards of each element of the General Plan.
- 3-e. Review proposed amendments to the General Plan to ensure continued internal consistency among the elements.

Jobs/Housing Balance

- 3-f. Adopt land use regulations which allow mixed use developments as a mechanism for achieving a jobs/housing balance.
- 3-g. Require staff reports on development applications for residential developments of 100 or more units to address the impact of that development upon the subregional jobs/housing balance.
- 3-h. Require staff reports on development applications for commercial, light industrial and office developments of more than 10,000 square feet or generating 25 or more jobs to address the impact of that development upon the subregional jobs/housing balance.
- 3-i. Provide incentives to encourage the construction of affordable housing in areas where few such opportunities exist and significant employment centers exist or are proposed.

Growth Management

- 3-j. Institute the growth management program described in the following section of Chapter IV. Enforce traffic level of service (LOS) standards and performance standards for fire, police, parks, sanitary facilities, water, and flood control.
- 3-k. Prepare and adopt a five year capital improvement program for the purpose of meeting or maintaining traffic service and performance standards for other facilities, as set forth in this plan.
- 3-l. Review and amend as necessary all adopted fee schedules to ensure that they meet the cost of planned improvements. Adopt other development mitigation programs as needed to ensure that development is paying its share of the costs associated with growth.
- 3-m. Work with the County Transportation Commission to determine what specific situations merit a "finding of special circumstances" under Measure C, requiring additional mitigation and/or exemption from traffic standards.
- 3-n. Seek funds to maintain and expand a Countywide comprehensive transportation model for the purpose of monitoring Countywide traffic service levels and other infrastructure.

Community Identity and Urban Design

- 3-o. Maintain visual separations between communities where the opportunity still exist.
- 3-p. Promote, devise and maintain appropriate development/redevelopment themes, including design review criteria to provide community identities for the commercial districts of unincorporated communities in the County.
- 3-q. Amend the County Code to included design review of development projects as a function of the Planning Commission.
- 3-r. Initiate and enforce, if necessary, specific development standards for both proposed and existing businesses to achieve appropriate landscaping, design and sign structures.

Residential Uses

- 3-s. Amend the R-40 district to require a minimum lot size of 43,560 square feet; create new multiple family district(s).

Business and Employment Uses

- 3-t. Stimulate increased quantities and different types of local economic development and employment growth through the adoption and implementation of a comprehensive economic development strategy for communities within the County.

- 3-u. Identify and target suitable growth industries for future contacts to encourage their establishment within the County.
- 3-v. Expand and pursue joint ventures between the County, cities, and private sector which attract appropriate economic development into economically depressed areas of the County.
- 3-w. Delineate precise boundaries for central commercial districts to protect adjacent residential areas and prevent thoroughfare (strip) commercial development patterns.
- 3-x. Require new commercial development to provide separate parking areas or contribute to community parking facilities.
- 3-y. Develop and implement a specific strategy for providing additional off-street public parking in the central commercial districts.
- 3-z. Stimulate the sound economic development of the County by participating in efforts to coordinate industrial development policies with relevant private and public agencies.
- 3-aa. Define auto dismantling activity in the County Zoning Ordinance as an industrial use, and confine its future development to designated industrial areas.
- 3-ab. Review and revise all commercial districts defined in the Zoning Ordinance to ensure that the regulations do not allow uses in the districts that are inconsistent with this General Plan.

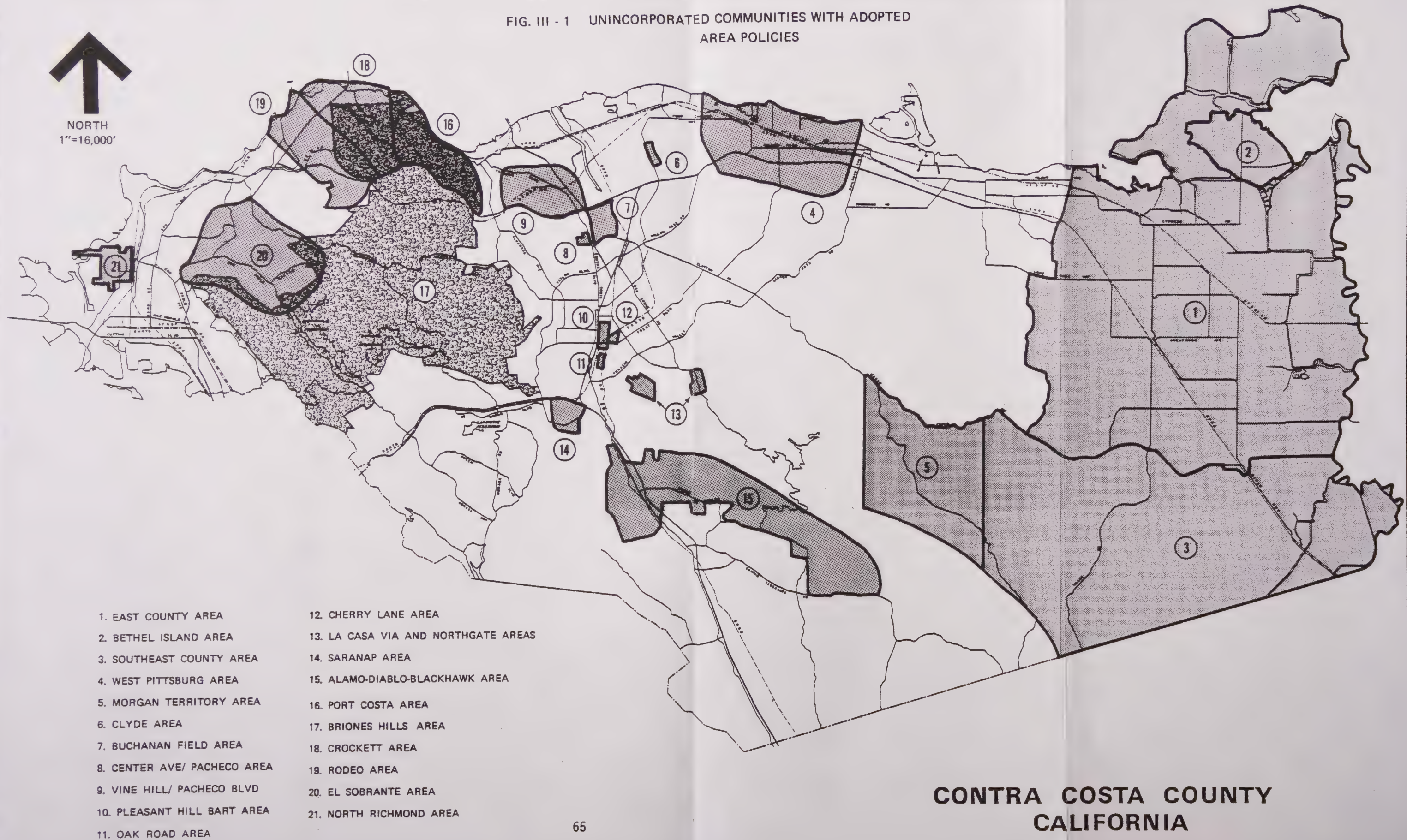
Local Plan Policies

Introduction

Contra Costa County adopted several Area General Plans during the 1970's and 1980's. The Area General Plans, as the title suggests, include development policies that are applied only to specific locations or unincorporated communities in the County, not the entire County. For example, the El Sobrante Area General Plan was adopted in 1980 and set development goals and standards for only that part of the County. In addition, scores of other General Plan Amendments were also adopted since the last comprehensive plan was adopted in 1963. These plan amendments usually involved relatively small changes in the land use policy, affecting only a few properties at most and an area of a few acres.

Area plans and other amendments to the existing County General Plan were written to take into consideration localized concerns and characteristics of the individual communities. The Area General Plans that have been adopted during the 1970's and 1980's were usually written by staff after an extensive public participation process which included local residents. In some cases they tend to be much more detailed and specific than other portions of the County's General Plan, such as the Open Space/Conservation Element or the Land Use Element. Often, the accompanying text within an Area General Plan or a General Plan Amendment sets forth relatively detailed standards which developers of a property or series of properties must meet to conform with the intent of the plan.

FIG. III - 1 UNINCORPORATED COMMUNITIES WITH ADOPTED
AREA POLICIES



The following Area General Plan policies and individual plan amendment language have been incorporated into this updated County General Plan. The policy and implementation language has been divided into specific areas of the County. Figure III-1 indicates those unincorporated communities for which detailed growth policies have been adopted.

Policies for the East County Area

Land Use

- 3-44. The intent of the County General Plan is to incorporate the growth policies of the existing East County Area General Plan, adopted in 1978. As such, this plan directs most of the residential and commercial growth that is anticipated to occur in the unincorporated East County area during the planning period into the Oakley community, with smaller amounts of recreation-oriented development allowed on Bethel Island.
- 3-45. Docks and marinas permitted by the implementing zoning district shall be considered for approval in certain designated Delta Recreation areas based upon the following criteria:
- (a) where projects can be clustered and located adjacent to similar uses;
 - (b) along waterways having an adequate channel width as defined by the State Harbors and Navigation Code;
 - (c) in areas having adequate public vehicular access;
 - (d) where off-site improvements, such as required access roads, can be assigned to development;
 - (e) where adequate onsite sewage disposal can be provided;
 - (f) where located in an area served by a public fire protection district; and
 - (g) where such uses will not conflict with adjacent agricultural uses.
- 3-46. The density and development of single family homes in the East County ~~Oakley~~ area, in lands designated for residential or other urban uses, shall be related to service availability criteria, as defined below:

<u>Service Availability</u>	<u>Minimum Allowable Parcel Size</u>
No public water or sewer connection available.	5 acres
One public service (sewer or water) connection available.	1 acre
Both public water and sewer connections available.	Minimum parcel size consistent with the specified General Plan densities, as well as drainage, health, and other applicable standards.

Transportation/Circulation

- 3-47. Restrict access on to State Highway 4 and within those areas designated for residential development.
- 3-48. Improve existing interchanges and establish new interchanges over State Route 4 by developing plans in coordination with Caltrans and the Cities of Pittsburg, Antioch and Brentwood.
- 3-49. Encourage the State to incorporate the Delta Expressway into the State Highway System as a bypass to State Route 4 and upgrade the facility to a freeway.
- 3-50. The County shall encourage the expansion of regularly scheduled transit service and express bus service to urbanizing areas east of Antioch.

Policies for the Bethel Island Area

- 3-51. This General Plan reiterates the policies of the 1978 East County Area General Plan, which designates the southern portion of Bethel Island for low density single family homes (1.0 to 2.9 units per acre) and the shoreline around the island for high density homes (5.0 to 7.2 units per acre). A significant amount of infill development of vacation-oriented and other residences could be accommodated through the existing plan designations.
- 3-52. In addition, the following policies apply to the Connor property, which has been designated for development as a townhouse/golf course project at the intersection of Bethel Island and Gateway Roads:
 - (a) the plans allows the development of approximately 31 acres of townhouses, designated Multiple Family Residential-Low Density, at a density of 7.3 to 11.9 units per net acre;
 - (b) the remaining approximately 95 acres of the property is designated Parks and Recreation, and is to be used as a golf course or other permanent open space use, contingent upon development of the remaining portion of the parcel.

Policies for the Southeast County Area

Land Use

- 3-53. Numerous policies for this area were drafted by a citizens advisory committee appointed by the Board of Supervisors in 1985. Most of these policies are incorporated into this General Plan. They apply to Southeast County, a large rural area of approximately 74 square square miles roughly bounded by Marsh Creek Road/Camino Diablo; the Morgan Territory Regional Preserve; and the Alameda and San Joaquin County borders.

- 3-54. Many of the specific policy statements of this plan support the concept of allowing for multiple uses, compatible with the predominantly agricultural character of the area. The policies stress the need to preserve designated agricultural lands for agricultural use, and also to allow certain other uses in the area, such as wind energy farms, mineral extraction, and reservoirs.
- 3-55. The Southeast County area is almost exclusively planned for agricultural, watershed, or public purposes. New land uses within this plan area should be limited to those which are compatible to the primary agricultural and watershed purposes of the area (farming, ranching, poultry raising, animal breeding, aviaries, apiaries, horticulture, floriculture and similar agricultural uses and structures) and consistent with the multiple use philosophy enumerated by this plan.

Subject to specific project review and the policies listed within this plan, the following uses are generally consistent with the planned agricultural areas:

- (a) Public and private outdoor recreational facilities;
 - (b) Dude ranches, riding academies, stables;
 - (c) Wind energy conversion systems;
 - (d) Single family residences on larger lots;
 - (e) Mineral resources quarrying;
 - (f) Oil and gas wells;
 - (g) Pipelines and transmission lines; and
 - (h) Veterinarian offices and kennels.
- 3-56. Southeastern Contra Costa County contains a range of natural and cultural resources which warrant special recognition in the General Plan. Mineral and meteorological resources exist which have the potential to be developed as additional uses within this essentially agricultural area. Multiple uses of the land which assist in its long term protection as an agricultural area are to be encouraged.

Policies regarding these specific natural and cultural resources are briefly summarized below. However, a more detailed discussion and additional policies should be referred to in other elements of this General Plan, separated into the following topics:

- o wind turbine development or wind energy "farms" (policies are found in the Open Space/Conservation Element);
- o mineral resource areas (policies are found in the Open Space/Conservation Element);
- o archeological and wildlife resources (policies are also found in the Open Space/Conservation Element);
- o Contra Costa Water District reservoir(s) planned in this area (policies are found in the Public Facilities/Services Element);
- o the East Contra Costa County Airport (policies are found in the Transportation and Circulation Element);

- o existing and planned recreation uses in the area (policies are found in the Public Facilities/Services Element); and
- o general circulation uses (policies are found in the Transportation/ Circulation Element).
- o Policies and implementation measures regarding the wildlife and archeological resources of the area are included in the Open Space/Conservation Element.

The southeastern portion of the County is blessed with archaeological and wildlife resources which are unique and worthy of long term protection and preservation. While in certain portions of the planning area multiple uses of the land may conflict with the need for environmental protection and enhancement, there are other areas where multiple use may reinforce preservation.

As a practical matter, it should be recognized that historically it has been the agriculturalists who have protected the unique environmental resources of the area. Their continued efforts in this regard are critical to the long range preservation of the area's resources.

- 3-57. The California Energy Resources Conservation and Development Commission has identified the Altamont Pass area, including the southeastern portion of Contra Costa County, as an area with high wind energy potential.

The "Wind Energy Resources" section of the Open Space/Conservation Element contains a map that depicts the generalized boundaries of the wind energy resource area in Southeast County, based on materials developed for the State Energy Commission. The map identifies those areas that experience average wind speeds of at least 15 mph at an altitude of 70 feet above the ground. The same section includes specific policies that govern new wind turbine development in the County.

Clusters of wind turbines generate a certain amount of noise which could be a nuisance if new subdivisions or residences are allowed immediately adjacent to the existing turbines or on properties already approved for wind turbines. New residential uses should be discouraged within the wind energy areas. If wind farms become obsolete or are removed in the area, these policies should be reviewed through a subsequent General Plan amendment.

Wind farm uses are to be considered appropriate within the resource area or along the periphery of the wind energy resource area, subject to a careful review of the environmental impacts of specific wind farm proposals.

- 3-58. Within Southeast Contra Costa County there is a geological deposit of domine sandstone located just southerly of Camino Diablo and easterly of Vasco Road. This area is further discussed and mapped in the "Mineral Resources" section of the Open Space/Conservation Element.

Limited residential or ranchette development of these mineral properties may be appropriate, but residential use shall be identified as secondary to mineral operations and will not be allowed to preclude the full utilization of identified mineral resources. Any nearby residential use will be permitted conditionally after recognizing the probable expansion of mineral operations and accepting the possible nuisance and inconvenience associated with mineral operations.

- 3-59. Public agencies are in the process of acquiring substantial portions of the planning area to serve the needs of the growing population of the East Bay. Two major public works projects have been approved that must be reflected in this plan amendment: the proposed East Contra Costa County Airport and the reservoir system proposed by Contra Costa Water District. Each is discussed further in the Circulation Element and the Public Facilities/Services Element, respectively.

At the time of this writing, construction of the airport has been approved by the Contra Costa Board of Supervisors and the initial funding has been allocated by the federal government. The general location of the airport is shown on a map contained in the Circulation Element. As the airport project proceeds, land developments in the area must take into account safety, noise, aviation easements, and preservation of the area's agricultural and biological resources. Until such time as acquisition of land and construction of the airport is funded, the subdivision of nearby lands may continue to be considered under established County procedures and the policies of this plan.

The Contra Costa Water District has adopted a Phase I plan to pursue land acquisition in Southeast County that would enable the district to consider future construction of one or more reservoirs. The district Board of Directors has decided to acquire or ensure the protection of the Kellogg Creek watershed, which covers approximately 30 square miles of the planning area. The acquisition of this watershed area in the southeastern portion of the County is consistent with this plan.

Transportation/Circulation

- 3-60. Vasco Road is the only direct transportation link between Eastern Contra Costa County and the Tri-Valley area and may be inundated if a reservoir is constructed by the Contra Costa Water District and/or other agencies in the Kellogg Creek watershed. Any replacement road required as mitigation for the reservoir should be designed to be compatible with Caltrans' plans to extend State Route 84 from Livermore to Brentwood. Only a single roadway should be constructed as a replacement for Vasco Road. The roadway should have restricted access to minimize growth inducing impacts in this environmentally sensitive area, and be sensitive to the unique resources of the area.
- 3-61. This plan further recognizes that if a reservoir or reservoirs are built, that the Contra Costa County Water District or other agencies may be required to construct additional secondary construction and access roads on these lands in order to serve their facility.

- 3-62. The Southern Pacific railroad provides rail service through Brentwood and Byron. No change in status is anticipated in this plan amendment. However, the railroad right of way does provide the potential for a recreational trail route and for construction of future pipelines.

Policies for the West Pittsburg Area

Land Use

- 3-63. The following policies shall guide development in the West Pittsburg area:

- (a) Upgrade community appearance by encouraging development of new uses to replace antiquated developments.
- (b) Provide for well designed projects and limited vehicular access to traffic arterials through the assembly of small parcels of land along Willow Pass Road.
- (c) Discourage new areas or expansion of strip commercial development in the community except as provided in this plan by the Willow Pass Mixed Use Corridor.
- (d) Achieve and maintain a healthy environment for people and wildlife, that minimizes health hazards and disruptions caused by the production, storage, transport and disposal of toxic materials.
- (e) A Redevelopment Plan for the West Pittsburg area was adopted by the Board of Supervisors in December, 1987. All development proposals should be reviewed by, and coordinated with, Redevelopment Agency staff to insure compatibility with the Redevelopment Plan. Additionally, involvement with the redevelopment process will allow the County to coordinate concurrent development proposals and to possibly facilitate the construction of public improvements that will further the goals of the Redevelopment Plan.

- 3-64. Many areas designated for multiple family residential uses on the plan map were originally designed and are presently used for less intensive uses. These areas have property characteristics that would interfere with a successful conversion to higher intensity uses. Parcel sizes are small, restricting provision of on-site parking, landscaping and recreation facilities. Existing drainage facilities are antiquated and inadequate. Modifications to existing road design and access points would be desirable to handle greater traffic loads. Given these parameters, an incremental uncoordinated approach to development would probably fail to safeguard community interests.

Therefore, this plan supports the assembly of land designated for multiple family residential uses in sufficient acreages to make feasible the provision of a quality residential environment and adequate infrastructure to handle drainage and traffic concerns. Those projects that meet these objectives will be eligible for the maximum housing units within the range of the applicable density category.

3-65. The following development standards shall be applied to projects proposed in the Willow Pass Road Mixed Use Corridor:

- (a) access to parcels along Willow Pass Road should be minimized and should be from secondary roads whenever feasible;
- (b) development of shared access with uses on abutting properties should be considered at the time of project review;
- (c) the assembly and consolidated development of frontage parcels is encouraged by this designation;
- (d) control on the placement, design, number, and size of signs should occur during project review and should be adequate to inform the community of the firm's identity without being visually disruptive; and
- (e) the County shall consider the adoption of a streetscape plan for Willow Pass Road including, if appropriate, revision to existing precise alignment plans. The plan review shall explore the merit of a street tree/landscape program, on-street parking, restricted traffic movements and transit facilities.

3-66. A two story height restriction shall be applied to the properties included in the Snow and Tener General Plan Amendments, adopted in 1984 and 1986, respectively. The properties include parcels 095-130-023 and 097-260-004, 005, 006, 008, 013, and 014.

3-67. Special project considerations shall be applied to development of the area north of Evora Road, south of the California Landing subdivision, and east of the View Pointe subdivision. These approximately 36 acres of land (APN 098-220-011 and 012) will be developed as a Planned Unit project under the P-1 zoning district. A large portion of the site is designated as Multiple Family Residential-Medium Density. The remaining portions of the site are designated Open Space and Public and Semi-Public (the water tank parcel owned by Southern California Water Company).

A range of 278-487 housing units may be considered on the site. The actual development plan boundaries are to be determined flexibly. However, it is probable that through the project approval process the number of units to be allowed on the site may decline below 278, possibly substantially lower, and that the areas required to be preserved as open space may increase proportionately. The final number of units to be allowed on the site will be determined upon careful review of the development applications and a review for conformance with the concerns outlined below:

- o soil conditions and grading plans;
- o compatibility with nearby uses and provision of adequate buffers;
- o maintenance or enhancement of scenic quality to include schematic landscape plans; and
- o availability of adequate water and sewer facilities.

In addition, the following issues will be taken into account when reviewing applications in this area:

- o the Scenic Routes portion of the General Plan shall be carefully applied;
- o buildings along the northern property line will be limited to two stories;
- o the hillside at elevation 310 feet shall be preserved and ridge-lines/hills will be respected; and
- o the City of Pittsburg will be consulted with relationship to its planning policies and hillside development ordinance, which shall be carefully considered and reviewed.

Transportation/Circulation

- 3-68. The number of streets and driveways intersecting or entering Willow Pass Road shall be minimized.
- 3-69. Well-designed projects and limited vehicular access to traffic arterials shall be encouraged through the assembly of small parcels of land along Willow Pass Road.

Policies for the Morgan Territory Area

- 3-70. A separate General Plan/zoning conformity study shall be initiated by the County in the Morgan Territory Road area, south of Marsh Creek Road.
- 4-71. The restriction on further fragmentation of parcels is crucial to this plan. A rezoning study should be initiated on this planning area to apply new, more stringent zoning categories. A scenic route specific plan will be implemented to ensure adequate rights-of-way for the scenic routes along Morgan Territory Road and Marsh Creek Road.
- 4-72. Development on the Pacini property will be considered with the further stipulation that a detailed plan review of any proposed subdivision be undertaken for presentation to the Planning Commission and the purpose of that review would be to identify appropriate building sites on this property and to limit the density to whatever sites are, in fact, found to be appropriate.

Policies for the Clyde Area

- 3-73. Although the small town of Clyde is mostly built out, there are vacant properties adjacent to the Contra Costa Canal and near the community park which are being developed. Any future infill within the area must conform to the following policies:

- (a) the existing residential neighborhood is designated Single Family Residential-High Density (5.0 to 7.2 units per net acre), but in the Clyde area the density of any infill housing (excluding the area described in (b) below), is not to exceed 6 units per net acre;
- (b) vacant land adjacent to the Contra Costa Canal is designated Single Family Residential-Medium Density (3.0 to 4.9 units per new acre). This reduced density reflects larger lots in this steep areas and will help to avoid excessive traffic along narrow Park Street;
- (c) new construction should be compatible with the existing architecture to the extent possible. Ultra modern design in architecture should be discouraged; and
- (d) the burden of providing adequate utilities and traffic circulation for new construction shall be borne solely by the developer.

Policies for the Buchanan Field Area

Land Use

- 3-74. A lengthy amendment to the County's General Plan was adopted in 1984, which specified land use, circulation, noise, and recreation policies for the area around the County's main airport, Buchanan Field. This plan incorporates that amendment. The land use policies set forth in that amendment are printed below, and the additional policies may be found in the Transportation and Circulation Element (a description and policies regarding airport operations and roadways in the area), and the Noise Element (a description and policies regarding acceptable noise contours.)
- 3-75. Two areas adjacent to the airport are designated for office uses: 13 acres located at the intersection of John Glen Drive and Concord Boulevard, and 22 acres adjacent to the existing mobile home park, west of the airport runway. General and administrative offices are allowed in this category, along with restaurants to serve the offices area. The specific uses allowed will be determined through review of projects and leases with the County.
- 3-76. For the two office areas to be developed, specific transportation improvements are required as a condition of approval. Such improvements will be tied directly to the County leasing of the areas and the extent of the improvements are to be determined by the Board of Supervisors as part of the bid packages. A major improvement, the construction of an extension of Marsh Drive (to be called Diamond Boulevard), is the responsibility of the developer of the 22 acre parcel.

- 3-77. The area designated for office use at the entrance to the airport, at John Glen Drive, is limited to development of 478,000 square feet of space, consistent with the density allowed under a development agreement already signed by the County. For the other 22 acre parcel, development is limited to 682,000 square feet of office space.
- 3-78. The major privately owned lands within the area are designated for light industrial use and are located along I-680, west of the airport, between the existing mobile home park and the golf course.
- 3-79. The California Public Utilities Code requires that the intent and purpose of the plans and policies adopted by the County Airport Land Use Commission be incorporated into the County General Plan. The commission has adopted numerous regulations which strictly define what types of land use, and the design of those uses, which will be allowed within the Commission's airport "planning area" and within designated "safety zones" under the airport's flight path. These policies and regulations are detailed in the "Airports and Heliports" section of the Transportation and Circulation Element.

Transportation/Circulation

- 3-80. [See the policies listed under the "Airports and Heliports" section of the Transportation and Circulation Element (Chapter V).]

Policies for the Center Avenue (Pacheco) Area

- 3-81. The plan for the area in Pacheco located generally along Center Avenue west of the flood control channel is designated for Multiple Family Residential-Medium and High Density (12.0 to 20.9 units and 21.0 to 29.9 units per net acre, respectively). The plan endorses efforts to consolidate smaller parcels into logical groupings for the private redevelopment of areas from single family homes to multiple family residential uses. Projects covering smaller existing lots should lead to higher densities and better designed projects.

Additionally, consolidation of lots should lead to fewer access points onto arterial and collector roads such as Center Avenue and Deodar Drive. North of Center Avenue, it is hoped that projects can be grouped into three or four applications, and south of Center Avenue applications should include all of existing blocks or the remnants of existing blocks.

- 3-82. The plan recognizes the historical significance of the W.T.Hendrick house (218 Center Avenue) and encourages its continued preservation. Development that surround the house should be designed in a fashion that compliments the structure and works toward its continued preservation.

Policies for the Vine Hill/Pacheco Boulevard Area

Land Use

- 3-83. The scenic assets and unstable slopes of the Vine Hill Ridge are to be protected for open space/agricultural use.
- 3-84. The residential neighborhood east of I-680 shall be buffered from the industrial/land fill-related uses.
- 3-85. Approximately 40 acres of land south of the ATSF tracks, between Morello and Pacheco, is designated "Agricultural Lands," to encourage the continued operation of the Viano family vineyards and winery.

Transportation/Circulation

- 3-86. The County should cooperate with landowners in the Waterbird Way corridor north and south of the ATSF railroad tracks to develop a financial plan for the extension of Waterbird Way south to Imhoff Drive. Access to industrial land south of the railroad tracks shall not be allowed though the adjacent residential neighborhood.

Policies for the Pleasant Hill BART Station Area

Land Use

- 3-87. The area immediately adjacent to the Pleasant Hill BART station is the subject of special development standards outlined in the Pleasant Hill BART Station Specific Plan, adopted in 1983 and as amended through 1988. Most of the residential and commercial development allowed under this specific plan has already been approved by the County, with the exception of development on a large parcel owned by the BART District, much of which has not yet been approved for construction. To assist in the assemblage of development sites and to finance required infrastructure to support the development, the County, in 1984, adopted a Redevelopment Plan for the area. The Redevelopment Plan was amended in 1988 to facilitate the development of affordable rental housing in order to achieve a jobs/housing balance.

Development of additional properties in the Oak Road, Cherry Lane, and Hookston areas which are near the BART station but outside the boundaries of the specific plan are governed by the policies included in the Oak Road, Cherry Lane North, and Hookston Square General Plan Amendments, adopted in 1985 and 1986. These policies are listed separately below.

- 3-88. The overall goals for the Pleasant Hill BART station area are to:
 - (a) increase the concentration of high intensity employment uses and affordable housing in the area to better utilize the regional transit accessibility provided by BART;

- (b) integrate housing into the area where environmental constraints (such as noise from I-680) or overall land use considerations do not preclude it;
- (c) provide sufficient retail and other commercial services and public open space amenities for station area employees, BART riders, and residents of the station area and nearby residential and commercial uses;
- (d) promote a station area appearance which will project a positive image and have high regional and local identity;
- (e) achieve cooperative development actions by BART and the private sector which will more fully utilize the station area resources;
- (f) develop areas intensively used by pedestrians at a human scale and with adjoining uses which will visually and functionally enliven the area;

3-89. There are several specific plan policies which shall be applied to development proposed for the BART District property at the Pleasant Hill station. Refer to the Pleasant Hill BART Station Specific Plan for the policies.

Transportation/Circulation

3-90. In cooperation with Pleasant Hill, Walnut Creek, and transit operators, determine the feasibility of establishing bus service along the SPRR right-of-way between Concord and Rudgear Road.

Policies for the Oak Road Area

3-91. The area east of Oak Road between Todd Lane and Walden Road is designated Multiple Family Residential-High Density, with a density range of 12.0 to 29.9 units per acre. However, developments in excess of 22 units per net acre shall only be considered for each of the parcel assembly areas shown in Figure III-2 after preparation of an Environmental Impact Report. In addition to the normal CEQA concerns, the EIR will need to explore off-site transportation fees and impacts to adjacent single family neighborhoods.

3-92. Projects proposed in the Oak Road area described above shall be granted only through a Planned Unit District zoning process which includes all parcels within one of the specified sub-areas shown on Figure III-2, i.e. all parcels fronting along Kingston Place or Annette Court. Applications for areas smaller than these sub-areas shall be restricted to residential densities allowed by the R-15 zoning.

Projects in the area shall be designed in such a way as to minimize traffic and drainage impacts in the area. Multiple family projects will be required to participate in off-site traffic improvements such as widening Oak Road to its planned ultimate width across the Contra Costa Canal, signalizing the Oak Road/Walden Road intersection, and area-wide drainage improvements. In addition, any project shall be designed to prevent runoff onto neighboring properties except through specific flood control improvements.

Policies for the Cherry Lane Area

- 3-93. Properties between Del Hombre Lane and Cherry Lane are designated Multiple Family Residential-Very High Density, which allows construction of apartment or condominiums at a density of 30.0 to 44.9 units per net acre. The purpose of the designation is to allow for more intense housing adjacent to the Pleasant Hill BART station.

Projects in this area shall be designed and developed to minimize impacts on adjacent single family residential areas along Cherry Lane, and to discourage traffic diversion through the neighborhood. All development shall have access from Del Hombre Lane or at the southern end of Cherry Lane, and shall be designed to provide a transition or buffer to the adjacent single family areas. Special consideration will be given for rental housing in the area.

- 3-94. The boundary between the multiple family housing and the office uses that are designated along Treat Boulevard shall be treated flexibly. The following criteria shall apply to office projects in the area:

- (a) minimum development standards shall be those of the Limited Office zoning district;
- (b) no parking shall be permitted on Treat Boulevard;
- (c) no new ingress or egress is to be permitted from Treat Boulevard; and
- (d) consideration shall be given to commercial uses that provide services to the offices on the site.

A parallel service road northerly of Treat Boulevard will need to be completed to serve new office uses. Parking for those areas will be handled in a fashion that is consistent with the existing design theme of buildings fronting along Treat Boulevard.

- 3-95. The area east of the first phase of the Hookston Square office complex on Buskirk Road shall be designed to be compatible with, and hopefully an extension of, the existing project. New office development shall be designed in such a fashion as to minimize traffic and drainage impacts on the area. Development will be required to participate in off-site right-of-way and drainage improvements.

Policies for the La Casa Via/Northgate Area

- 3-96. Much of the La Casa Via and North Gate area is designated primarily for Single Family Residential-Very Low density use (0 to 0.9 units per net acre), which reflects the type of development that exists and is encouraged to remain. These areas are located in topographically difficult terrain where a large, compact population is not appropriate. The character of this area is to be rural. Lots larger than one acre are desirable and may be required on slopes of more than 15%. Keeping livestock for pleasure is appropriate in this area.

Policies for the Saranap (Walnut Creek) Area

- 3-97. The undeveloped hillside south of Olympic Boulevard and west of Tice Valley Boulevard is designated for Single Family Residential-Medium Density development along the base of the hill along Olympic, with the remainder of the site designated as Agricultural Lands, to reflect the steep, unbuildable slopes.

Policies for the Alamo-Diablo-Blackhawk Area

- 3-98. The emergence of a suburban pattern in the area shall be encouraged to promote the individuality and unique character of each community based on existing community images.
- 3-99. The character of the area as one of predominantly single family residences shall be developed, and multiple family residential units shall be provided in suitable densities and locations. A range of densities shall be offered in order to provide for a variety of family sizes, income levels, and age groups.
- 3-100. Commercial development of neighborhood and community services and sales businesses shall be encouraged. ~~Major~~ Regional-scale shopping centers are not considered appropriate.
- 3-101. Alamo's commercial district serves primarily the surrounding residential areas. This plan allows for continued commercial growth within the defined commercial area, which is separated from existing residential areas by the railroad on the west and transitional office uses along Orchard Court. This plan limits the expansion of these transitional uses to their existing boundaries north and south along Danville Boulevard.
- 3-102. The portion of Danville Boulevard north of Del Amigo Road should remain a two lane road, however, minor improvements to provide additional safety and increased capacity are acceptable. The lands shown as residential on the plan map adjacent to these roads should be restricted to residential uses. Strip commercial and office uses under land use permits are inconsistent with this plan and are to be restricted.

- 3-103. In Alamo the appropriate single family residential zoning is R-20. Both Alamo and Diablo have special characteristics which preclude clustering in established areas.
- 3-104. Encourage commercial development that is related to the needs of the neighborhood and community. Regional scale shopping centers are not considered appropriate.
- 3-105. Developments shall be reviewed to insure the reinforcing of the rural view of life as perceived by area residents.

Policies for the Port Costa Area

- 3-106. The plan for the Port Costa area restricts multiple family dwellings to multiple use buildings in the commercial area.
- 3-107. The plan endorses the establishment of a regional recreation area in the vicinity of Port Costa which is oriented towards pedestrian use and day use.
- 3-108. A key concept of the plan is to permit only open space uses on the lands surrounding the village, as well as the balance of the planning area.
- 3-109. The plan limits commercial development to small shops that are on the scale of small specialty and neighborhood retail shops and that avoid automobile-oriented uses.
- 3-110. The design of structures in the commercial area can have a significant effect on the character of the district. The following design policies are provided so that construction and renovation in the commercial area will preserve and contribute to the unique and historic nature of the town:
 - (a) New construction must be placed close to the property line along the street, rather than set back on the lot, to provide for continuous commercial frontage along the sidewalk. Variances from required setbacks may be necessary to accomplish this purpose. However, placement of on-site parking in front of a proposed structure is not acceptable;
 - (b) Building design should complement existing commercial structures and the historic character of the town. The incorporation of historic design features such as window moldings, dormers, balustrades, columns, wood siding, brackets and detailed cornices is encouraged. The facade treatment is particularly important. Care should be exercised in the selection of building materials and colors.
- 3-111. While the Countywide Open Space/Conservation Element offers policies for general application, this plan sets forth the following specific policies for the Port Costa area:

- (a) Subdivision of open space lands into ranchette size parcels is not in conformance with this plan; twenty acres is the minimum parcel size;
- (b) Development of open space lands for residential uses is contrary to this plan. (In the event the plan is amended to allow subdivision of open space lands for residential purposes, proposed projects must utilize a planned unit development format, as reflected in the P-1 zoning ordinance.)

Policies for the Briones Hills Area

- 3-112. This plan strongly supports the intent of the Briones Hills Agricultural Preservation Area compact that was signed by the County and the cities of Martinez, Pleasant Hill, Walnut Creek, Lafayette, Orinda, Richmond, Pinole, and Hercules in 1988.

The compact states that the jurisdictions voluntarily agree not to annex any lands within the 64 square mile area for the purposes of allowing urban development (see Figure III-3). This rural area includes large properties owned by either the East Bay Municipal Utility District or the East Bay Regional Park District, which are designated "Watershed" and "Parks and Recreation" on the General Plan land use map. The remaining properties are used primarily for grazing cattle and are designated "Agricultural Lands." This plan anticipates that the area will remain in public and agricultural use during the planning period.

Policies for the Crockett Area

- 3-113. In cooperation with the Crockett Improvement Association, develop a Specific Plan to develop detailed plans and implementation measures for rehabilitating the commercial areas and increasing retail parking.
- 3-114. Discourage industrial traffic that could impact the safety and efficiency of Crockett's non-industrial traffic.
- 3-115. Extend Cummings Skyway west of I-80 to San Pablo Avenue to provide direct freeway access for industrial traffic and to minimize industrial traffic through Crockett and Rodeo.
- 3-116. Expanded residential areas should not be served by existing roadways that function as Local Roads.
- 3-117. The goal of the plan is to protect and enhance the quiet, small town atmosphere of Crockett's residential neighborhoods, and provide for new development that is compatible with this goal.
- 3-118. Encourage mixed uses in the downtown area, consistent with the present pattern of residential and business uses.
- 3-119. Emphasize office uses along Loring Avenue in the context of a mixed uses district in order to broaden the employment base and to minimize parking congestion.

FIG. III - 3 BRIONES HILLS AGRICULTURAL
PRESERVATION AREA



BRIONES HILLS AGRICULTURAL PRESERVATION AREA
(ADOPTED 3/ 1987)

- 3-120. Provide that homes located in extreme or high fire hazard areas be constructed with fire-resistant materials and the surroundings be irrigated and landscaped with fire-resistant plants.
- 3-121. The category of Single Family Residential-Low Density occurs selectively within the Planning Area. One area is along Dowrelia Drive along a steep hillside with poor road access. A limitation on additional development is appropriate here without major improvements to road access.
- 3-122. One area designated Multiple Family Residential-Low Density is located along a steep north slope adjacent to Winslow Street. This area can be developed for clustered units but must be done so as to not obstruct views of the Carquinez Straits from the existing neighborhood.
- 3-123. A large vacant parcel owned by the County located adjacent to I-80 northeast of the Wickland Oil Company tank farm is designated Public and Semi-Public. This property is to be reserved for construction of a planned industrial arterial road between I-80 and San Pablo Avenue.
- 3-124. Projects proposed along these scenic routes will be reviewed to determine if there would be adverse visual impacts, and if so, mitigation measures will be applied. The guidelines for determining visual impacts include, but need not be limited to, the following:
- (a) long views across Carquinez Straits or the Bay should not be blocked;
 - (b) if a structure interrupts long views across Carquinez Straits or the Bay, the structure should be designed to enrich the scenic quality as much as possible;
 - (c) extreme topographic modification, such as cutting off a ridge top, is to be avoided; and
 - (d) structures highly visible from scenic routes should be designed to blend and harmonize with the natural scenery or background.
- 3-125. In order to protect the scenic environment of Crockett, it is a policy of this plan that identified scenic ridges and woods should not be obliterated. Any construction that takes place on identified scenic ridges should be designed with respect for the natural scenic qualities of the locality. In areas designated for development of steeply sloping lands, the following principles should be strictly applied:
- (a) High quality engineering of slopes is required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damages, and damages to visual quality. Particularly vulnerable areas should be avoided. Slopes over 25% are generally not suited for conventional cut and fill pad development.

- (b) Where flood control and drainage works are required along natural water courses, special consideration should be given to using innovative means of retaining the natural appearance of the waterway, and preserve the vegetation and wildlife it supports.
- (c) Conservation of the scenic beauty of the planning area requires restoration of natural contours and vegetation after grading and other land disturbances, and the design of public and private projects to minimize damages to significant trees and other visual landmarks.
- (d) Public facilities for outdoor recreation should remain an important land utilization objective in the community, to promote high visual quality, air quality maintenance, and to enhance outdoor recreation opportunities of all residents.
- (e) Extreme topographic modification, such as filling in canyons or removing hilltops is to be avoided. Clustering and planned unit development approaches to development are encouraged. All future development, whether large or small scale, should be based on locating safe and suitable sites for buildings, roads and driveways. Edwards canyon is very sensitive to erosion and siltation problems and should be given special protection.

Scenic Waterways are watercourses which receive use by fishing and recreational boat traffic and traverse areas of significant scenic quality. The scenic waterway designation applies to the waterway and its shoreline.

- 3-126. The shoreline and hills along the Carquinez Strait between Crockett and Martinez constitute one of the few undeveloped coastal areas in the East Bay. The scenic beauty of the area enhances, and is complemented by, the historic town of Port Costa. Preservation of this resource through the establishment of a recreation area is encouraged by this plan.
- 3-127. Crockett has an abundance of charming Victorian buildings. The special scenic and historic qualities of the town should be reflected in a sensitive approach to rehabilitation of these buildings. The structures listed below have been identified as local historic places, reflecting their historic and cultural importance to the community. It is a policy of this plan that the following places should be protected and their historic qualities should be preserved and enhanced:
 - (a) the American Legion Hall at Pomona and Alexander Streets;
 - (b) the Rolph Park Monument at Pomona Street and Rolph Park Drive;
 - (c) the Railroad depot on Loring Avenue;
 - (d) the Crockett Auditorium on Pomona Avenue;
 - (e) the Episcopal Church on Pomona Avenue;

- (f) the C&H Company House and Guest house in Crotona Heights;
- (g) the Crockett Library on Loring Avenue;
- (h) the Edwards Homestead; and
- (i) the Loring Road Victorians.

Policies for the Rodeo Area

- 3-128. Mitigate the affects of industrial traffic on downtown streets.
- 3-129. Direct the major portion of new residential development towards infilling and redevelopment of Rodeo proper.
- 3-130. Encourage reuse of existing buildings.
- 3-131. Establish the waterfront area as a focal point for the community by the development of a mixture of ~~multiple/family~~ parkland, retail and commercial recreational land uses.
- 3-132. Focus waterfront development around a shoreline park and promenade.
- 3-133. Develop a portion of the Rodeo Creek channel as a linear park.
- 3-134. Maximize public access to the bay.
- 3-135. Provide for a creek setback zone in Franklin Canyon to preserve the natural drainageway.
- 3-136. Encourage particularly the renovation of Rodeo's notable architectural specimens.
- 3-137. The policies set forth below are intended to guide the revitalization of Old Rodeo.
 - (1) A mixture of land uses, residential and commercial, must be established.
 - (2) A community parking plan must be devised and implemented to provide a sensible framework for development in Old Rodeo.
 - (3) When onsite parking is provided it should be established at the rear of commercial properties so that a unified commercial frontage is presented to the sidewalk.
 - (4) Zero building setbacks (as provided for in the C-B zone or by variance procedures) are necessary for continuity with existing buildings.
 - (5) Landscaped courtyards, atriums and streetside plantings should be included in development plans to provide visual and physical relief from the hard surfaces of the urban landscape.

- (6) Sitting places for resting, socializing or people watching should be incorporated into project designs.
- (7) Developers are encouraged to preserve and reuse Rodeo's architectural specimens.
- (8) Provide for integration of development in Old Rodeo with the waterfront area.

3-138. The waterfront is one of Rodeo's biggest assets. However, at the present time access to the waterfront is limited both visually (by the service commercial type buildings located along San Pablo Avenue) and physically (by the Southern Pacific railroad line). By designating this area Commercial Recreation in the plan it is anticipated that properties will eventually convert to uses which capitalize upon the proximity of the bay.

The Recreation Element provides for a waterfront promenade between the marina and the sanitary district facility. This linear recreation facility in combination with commercial recreation businesses could provide an exciting focal point for the town.

Large scale development in the Commercial Recreation area must be predicated upon a thorough study of the waterfront. Comprehensive development policies incorporated into a specific plan or waterfront development plan and implementation program must be in place before such development can proceed.

3-139. The property south of 7th Street along both sides of Willow Avenue up to Interstate 80, while designated for Office, shall be Specialized Office. The parcel east of Willow Avenue would allow a small portion of the site to be used in a commercial fashion as an appurtenant use to the main office use function of the site. An example of this concept is a bank operation center where a branch bank is also located on the site. The linear park proposed along the Rodeo Creek Channel will need to be integrated into the design of this property. Development on parcels along the proposed park portion of the creek should be oriented to the creek as well as surrounding roads and parking lots. The linear park can serve as a bicycle and pedestrian corridor to the Rodeo Shopping Center as well as a space of recreation. This area will need to be heavily landscaped to minimize impact on adjacent residential areas. Development of this area is to be with low level buildings and the site between Hawthorne and 7th Street must be developed as an integrated unit. The northern boundary of this site is intended to reflect the planned realignment of 7th Street to form an intersection with San Pablo Avenue.

3-140. An isolated parcel along Willow Avenue abutting Hercules, between San Pablo and I-80, is designated Office, but due to the surrounding street pattern, land uses which generate large amounts of traffic are not compatible with this location.

- 3-141. Retail businesses and services directly or indirectly related to recreational uses of the shore area are compatible with the Commercial Recreation designation, including restaurants, chandleries, hotels or motels, and bait and tackle shops.
- 3-142. The Light Industry designation is employed in the Franklin Canyon area along the north side of Highway 4, across from the golf course. This is a particularly striking section of a designated scenic route and its visual beauty must be preserved through careful scrutiny of proposed light industrial projects. In particular, project proponents should address height, color and appearance, and landscaping.
- 3-143. A buffer of Agricultural Lands around the eastern Union Oil property is created in this plan to separate the Viewpointe residential area from future industrial development on the Union property. These open space lands should remain essentially undeveloped.
- 3-144. In the Rodeo area there are presently no public park or recreation areas separate from school sites (which are designated Public/Semi-Public), aside from the public access designated on the shore. Private property shown in this designation such as the Franklin Canyon Golf Course should remain in essentially open space recreation uses. More intensively developed, privately owned recreation property is designated as Commercial Recreation.
- 3-145. Development of the opposite side of 7th Street is needed to complete the alignment of 7th Street and establish this important circulation connection.
- 3-146. This plan proposes three new recreation sites in Rodeo plus the development of unused land at Hillcrest Elementary School. The plan designates a linear park and trail along the Rodeo Creek channel from Interstate 80 north-northeast to 4th Street. A waterfront promenade is indicated running between the railroad overpass to the marinas and the Rodeo sewage treatment plant. The promenade is intended to focus upon one of Rodeo's greatest amenities, San Pablo Bay.
- 3-147. Lone Tree Point, a state-designated natural area, has been shown as a recreational site in the General Plan since 1957. This plan continues this practice. The property is privately owned at present, but should eventually come under public control to allow for improved access and use.

This plan supports the concept of the Carquinez Straits Regional Shoreline Park on the border between the Rodeo and Crockett planning areas, which is planned by the East Bay Regional Park District in their Master Plan. This plan also affirms the policy in the East Bay Regional Parks District Master Plan that a regional shoreline trail extending from Martinez to Point Pinole shall be implemented.

The trails plan also shows a trail along Rodeo Creek from the southwestern edge of the planning area to the waterfront downtown.

- 3-148. The majority of open space in this plan is located in the Franklin Canyon area and the adjacent hills. The steep topography and unstable slopes which characterize the hills limit their fitness for development.

Open space designations for this area reinforce the Countywide goal of agricultural preservation for continued agricultural productivity. The existing pattern in the open space area of relatively large parcels under consolidated ownership is necessary to successful range practices and will be maintained under this plan. The scenic value of the Franklin Canyon area has been asserted by the Rodeo community and is reflected in the scenic route designated for Highway 4 in the scenic routes section of the Transportation and Circulation Element. The hills and ridges along this route are the primary source of the corridor's visual quality and every effort should be made to protect its scenic characteristics.

- 3-149. Because of noise related impacts, both from transportation sources and from industry, acoustical studies will be required for major new developments and multiple family projects in the Planning Area even those extending beyond the 60 CNEL Noise Contours.

Policies for the El Sobrante Area

- 3-150. In cooperation with the City of Richmond, develop a Specific Plan for the San Pablo Dam Road commercial corridor to provide detailed plans and implementation measures to increase parking for shoppers and increase roadway capacity for through traffic.
- 3-151. Minimize the number of streets and driveways intersecting or entering San Pablo Dam Road, Appian Way and Valley View Road.
- 3-152. Provide for well-designed projects and limited vehicular access to traffic arterials through the assembly of the deep, narrow parcels of land along San Pablo Dam Road and Appian Way.
- 3-153. The overall goal of the area is to retain and reinforce the semi-rural and suburban character of the community with its strong emphasis on single family residences, the feature which has drawn most residents to the area.
- 3-154. Provide for well designed projects and limited vehicular access to traffic arterials through the assembly of the deep, narrow parcels of land along San Pablo Road and Appian Way.
- 3-155. Discourage new areas of strip commercial development in the community.
- 3-156. Require development of more public off-street parking in the commercial core area along San Pablo Dam Road, so as to increase traffic bearing capacity of the arterial.

- 3-157. Upgrade the community's drainage system to eliminate problems caused by local inundation, ponding and sheet overflow during storms, and eliminate open drainage ditches along portions of Appian Way and San Pablo Dam Road and throughout the community.
- 3-158. In view of the existing traffic problems and the limited ability of the circulation system to adequately handle substantial growth in traffic volumes, new development should be approved at the low to mid range of the respective single family residential land use density designations.
- 3-159. This plan calls for residential development to be directed primarily to areas where infilling of previously "passed over" property can occur, as well as to a limited number of larger parcels of undeveloped acreage. These larger parcels include the western slope of Sobrante Ridge, and the lower portions of the north face of San Pablo Ridge.
- 3-160. A major policy of this plan is to eliminate deep, narrow lots through the aggregation of land parcels in areas designated for multiple family use. Every effort should be made to encourage the aggregation of such lots to provide for better designed projects.
- 3-161. Areas outside the present and committed area of service capability of EBMUD and West Contra Costa Sanitary District are to be retained in the Open Space category.
- 3-162. In order to retain the ridgelines around El Sobrante in their natural state, it is recommended that a ridgeline preservation ordinance be developed which would prohibit the placement of any structure on or near the crest of a scenic ridge, such as San Pablo Ridge or Sobrante Ridge. All land above the 400' elevation shall not be developed for suburban purposes unless in conformance with the Land Use Plan Map.

Three areas have been designated Special Concern Areas in view of their key locational qualities. These areas are the Appian Way corridor, the San Pablo Dam Road commercial area, and San Pablo Ridge. Each of these areas is discussed below in detail.

- 3-163. The Appian Way Corridor Special Concern Area is to develop into a unified, well-designed neighborhood rather than an incremental accumulation of unrelated developments.
 - (a) Adhere to the adopted Appian Way Precise Plan, which provides for a standard of an 84 foot right-of-way. Develop continuous sidewalks and a bicycle path separated from automobile traffic, but designed within the right-of-way.
 - (b) Where possible, retain existing mature trees located either within or encroaching into the potential right-of-way, and incorporate them into the overall roadway design.
 - (c) Provide appropriate traffic signalization as new development occurs along the corridor, with each development required to pay an appropriate share of the cost.

- (d) Eliminate the hazardous ditches along Appian Way by installing appropriate storm drains as a part of right-of-way improvements.
- (e) Project design should reflect the objective of providing well-designed development suited to the building sites, at appropriate densities.
- (f) Commercial areas should maintain a low profile by limiting building height to 35 feet.
- (g) Emphasis should be on landscaping and architectural continuity along Appian Way, with building masses deemphasized.
- (h) Variances to parking standards shall not be granted.
- (i) Design of buildings shall be interesting and innovative, but should have a harmonious relationship with each other.
- (j) Consolidation of parcels shall be encouraged with emphasis on combined access and parking areas.
- (k) Variation in building set-back from Appian Way and along sideyards should be encouraged to create openness along the corridor.
- (l) Provide an attractive streetscape through streettree and frontage planting and encourage the use of drought-resistant plants.
- (m) Areas designated for commercial uses should be rezoned from Retail Business District (R-B) to Neighborhood Business District (N-B), which zone reflects the desired commercial character along Appian Way. Multiple family development shall not be allowed by land use permit in these areas.
- (n) Rezone areas designated from multiple family residential use to M-12, except that current zoning may be retained where development already exists.
- (o) A landscaped buffer zone, including attractive fences wherever necessary to provide privacy and security shall be provided between new developments and existing residences.
- (p) Within areas designated for development in the Appian Way Special Concern Area there are those areas which, because of topography, steep slopes or aesthetic qualities, are unsuitable for development and which shall be protected as open space whenever feasible.
- (q) Each individual multi-family development shall provide recreational facilities for its occupants.

SPECIAL CONCERN AREA APPIAN WAY CORRIDOR

CONCEPTS

- 1 Develop Appian Way to the 84'/64' standards between San Pablo Dam Road and Sobrante Avenue, as set forth in the adopted setback plan. Include provisions for continuous sidewalks, paths and existing mature trees to be incorporated in the right-of-way design.
- 2 Minimize the number of vehicular access points along Appian Way.
- 3 Retain existing open areas and vegetated areas located on the slopes which flank either side of Appian Way.
- 4 Provide small neighborhood parks at as many of the designed sites as feasible.

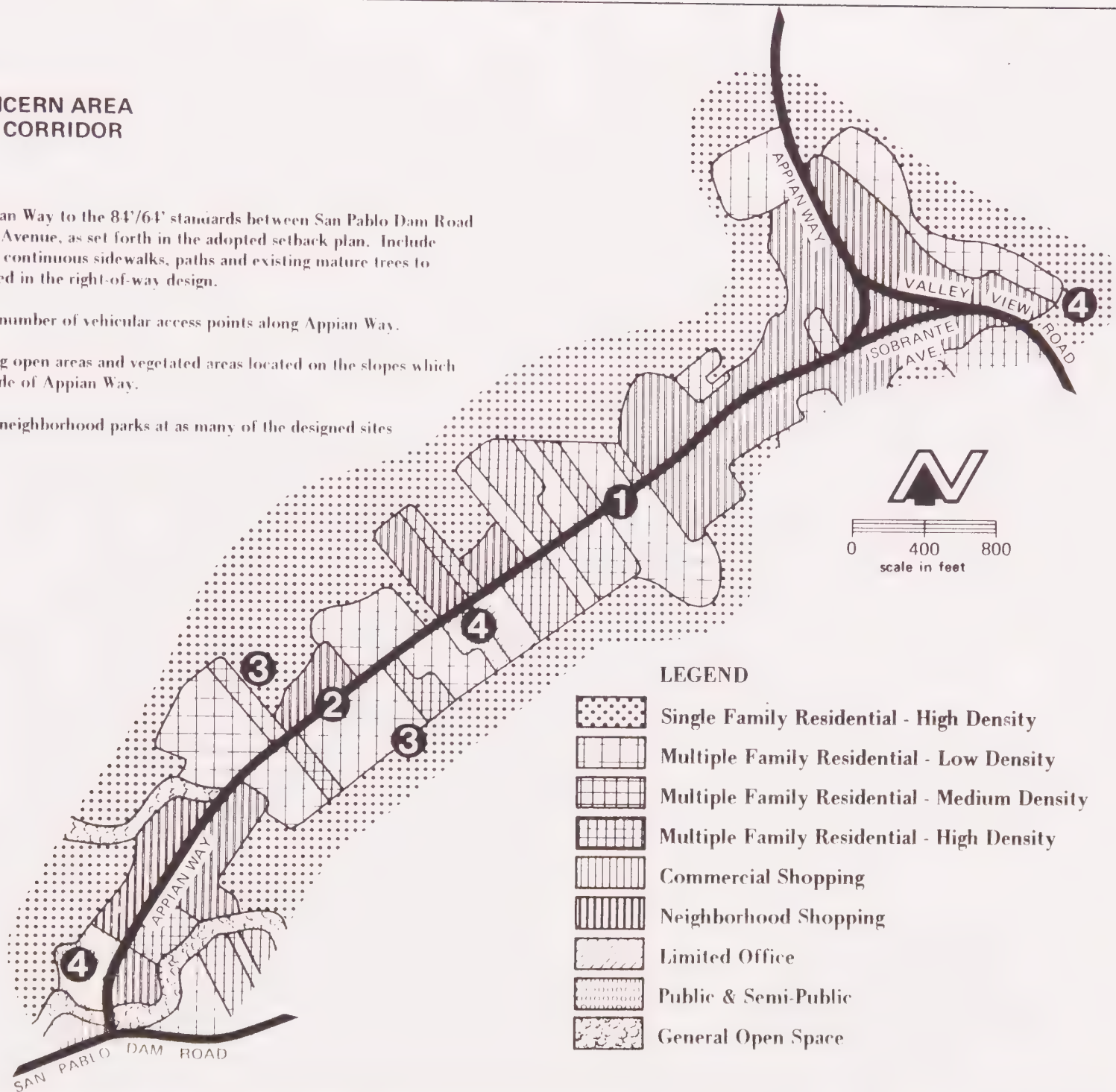


FIG. III - 4 APPIAN WAY CORRIDOR SPECIAL CONCERN AREA

3-164. The San Pablo Dam Road Special Concern Area is the primary business district for El Sobrante. The El Sobrante Community desires to retain its identity and individuality in the face of urbanization pressures. Two distinct, yet interlocking problems must be addressed: 1) devising a circulation system which allows traffic into, through, and around the business district, and 2) effective land use and design policies for the area.

- (a) The commercial area shall be made attractive and convenient to the community with emphasis on the following:
 - o Improved localized traffic circulation.
 - o Improved access by auto and public transit.
 - o Adequate parking.
 - o Diversion of non-shopper traffic by development of an alternative roadway.
- (b) Encourage commercial area rehabilitation and redevelopment, considering development of a unifying motif.
- (c) Commercial expansion shall be directed away from San Pablo Dam Road frontage to create a deeper and more appropriately shaped commercial district.
- (d) Improve overall area appearance through appropriate sign regulation. This would eventually result in removal of unsightly signs.
- (e) Provide adequate off-street parking, and secure the right-of-way for an alternate traffic route.
- (f) Enhance pedestrian traffic across San Pablo Dam Road by well marked and signalized crosswalks.
- (g) Develop commercial sites and parking areas contiguous to existing development, conforming to the plan map. Extend such uses only as far south as the proposed location of the new parallel arterial. Do not permit non-contiguous conversion of existing residential uses to commercial use.

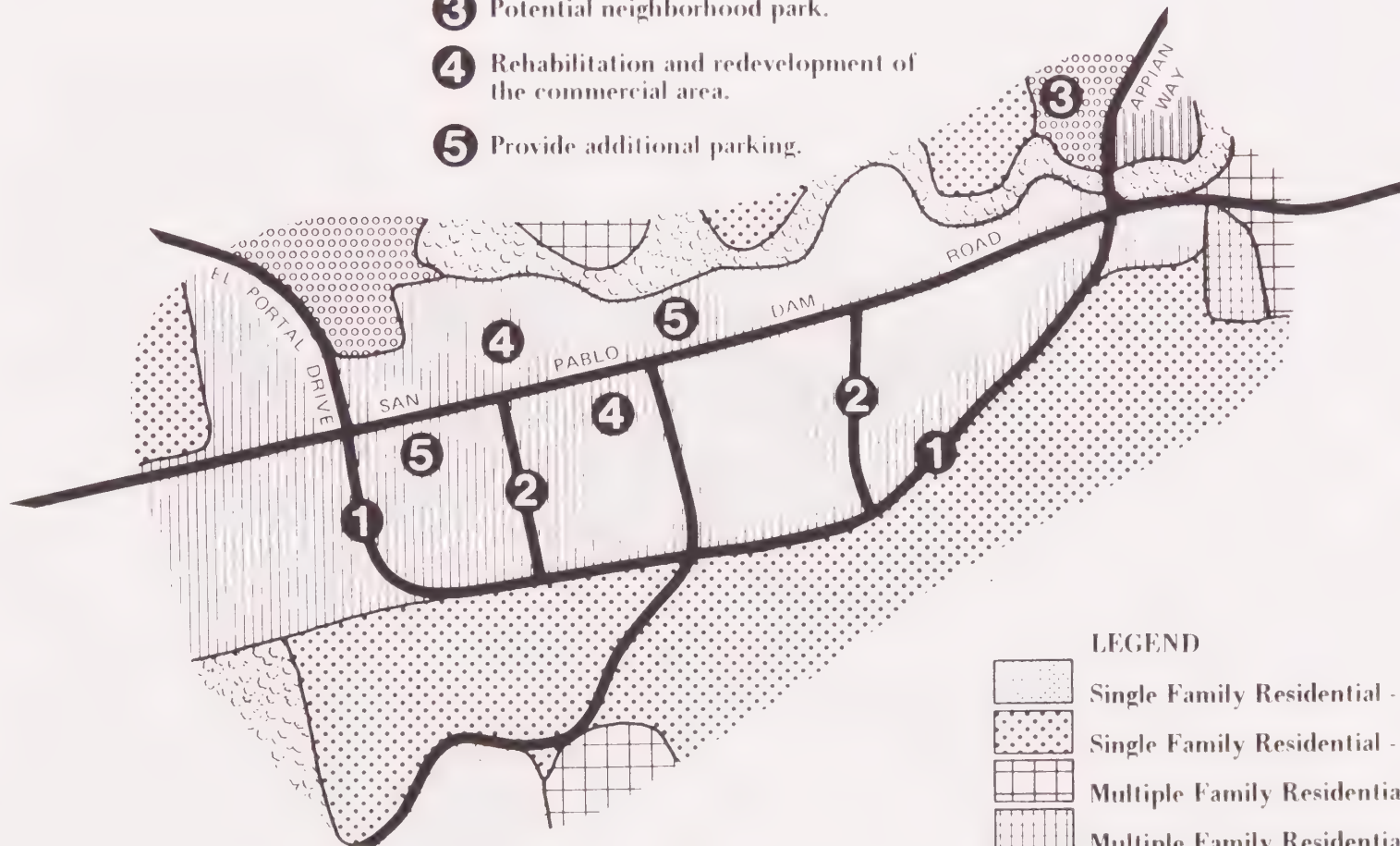
3-165. The San Pablo Ridge Special Concern Area consists of approximately 1,000 acres on the southerly borders of the Planning Area. It includes a large portion of San Pablo Ridge, with its heavily vegetated slopes, and an area below of lesser slopes near San Pablo Dam Road. The ridge provides an important visual reference to the El Sobrante Community and is a logical greenbelt border to the Planning Area.

The following policies should be applied to development in this Special Concern Area:

**SAN PABLO DAM ROAD COMMERCIAL
SPECIAL CONCERN AREA**

CONCEPTS

- 1** Proposed major arterial.
- 2** Provide additional collector streets.
- 3** Potential neighborhood park.
- 4** Rehabilitation and redevelopment of the commercial area.
- 5** Provide additional parking.



LEGEND

- Single Family Residential - Low Density
- Single Family Residential - High Density
- Multiple Family Residential - Low Density
- Multiple Family Residential - High Density
- Commercial Shopping
- Neighborhood Shopping
- Public & Semi-Public
- General Open Space



**FIG. III - 5 SAN PABLO DAM ROAD COMMERCIAL
SPECIAL CONCERN AREA**

- (a) The granting of development rights to the public or the dedication of land to public agencies should be required of developers for all projects proposed on lands at and above the 400 foot elevation level, as conditions of approval.
- (b) No buildings should be constructed along scenic ridgelines, including areas where the ridgeline is located below the 400 foot elevation level.
- (c) Existing trail head parking and trail access to Wildcat Canyon Park should be kept open for the community. Additional trail access and parking for cars and horse trailers should be added as new developments occur.
- (d) The City of Richmond and the County should coordinate their planning efforts to preserve views of San Pablo Ridge from the community.
- (e) Existing means of access to Wildcat Canyon Park should be maintained and expanded as development occurs.
- (f) All "significant natural features" including, but not limited to, trees and native plants, natural water ways, rock out-croppings and areas of historical and archaeological significance, within the immediate vicinity of the ridgeline shall be preserved.
- (g) A landscaped buffer zone, including attractive fences wherever necessary to provide privacy and security, should be provided between new developments and existing residences.
- (h) Local civic groups should study the creation of a special assessment district to purchase San Pablo Ridge or develop the appropriate mechanisms in order to retain the ridge as permanent open space.

Policies for the North Richmond Area

- 3-166. The plan for North Richmond designates housing in the Single Family Residential-High Density category (5 to 6.9 units per net acre), which also allows duplexes. A significant vacant area west of Third Street, between the two creeks, is also designated for single family homes and could result in more than a doubling of population in the area if it is developed in residential uses.
- 3-167. Major employment uses in the area are designated either Commercial, Heavy Industry, Light Industry, or Agricultural Lands. The latter category designate the existing nursery operations, which represent the most lucrative agricultural products in the County. The existing commercial area at 3rd Street and Chelsey is also designated for retail uses.

SAN PABLO RIDGE SPECIAL CONCERN AREA

97



0 scale in feet 1500'

LEGEND

	Single Family Residential - Low Density
	Single Family Residential - Medium Density
	Single Family Residential - High Density
	Multiple Family Residential - Low Density
	Public & Semi-Public
	General Open Space
	Parks & Recreation

CONCEPTS

- 1 Retain the area generally above the 400 foot elevation as Open Space with dedication of that land to EBRPD to be considered as development occurs.
- 2 Land use development below the 400 foot elevation will conform to the Land Use Map.
- 3 New land use development should adhere to the development policies contained in the "City of Richmond, Resource Management Study."
- 4 Provide trail connections through development to the Park.

San Pablo Dam Road

- 3-168. A Redevelopment Plan for the North Richmond area was adopted by the Board of Supervisors in July, 1987. All development proposals should be reviewed by, and coordinated with, Redevelopment Agency staff to insure compatibility with the Redevelopment Plan. Additionally, involvement with the redevelopment process will allow the County to coordinate concurrent development proposals and to possibly facilitate the construction of public improvements that will further the goals of the Redevelopment Plan.

Priority General Plan Amendment Areas

The "Priority General Plan Amendment Area" designation is applied to several unincorporated areas that are judged to potentially be appropriate for consideration of an expansion of the existing pattern of urban development in the County (see Figure III-4). This General Plan recognizes that areas be considered for additional growth, beyond those vacant properties that are already designated for urban development in the plans of the cities and County, may be required to meet housing demand during the planning period (twenty years). The areas mapped in Figure III-7 also acknowledge the various General Plan studies currently being conducted by individual cities and the County.

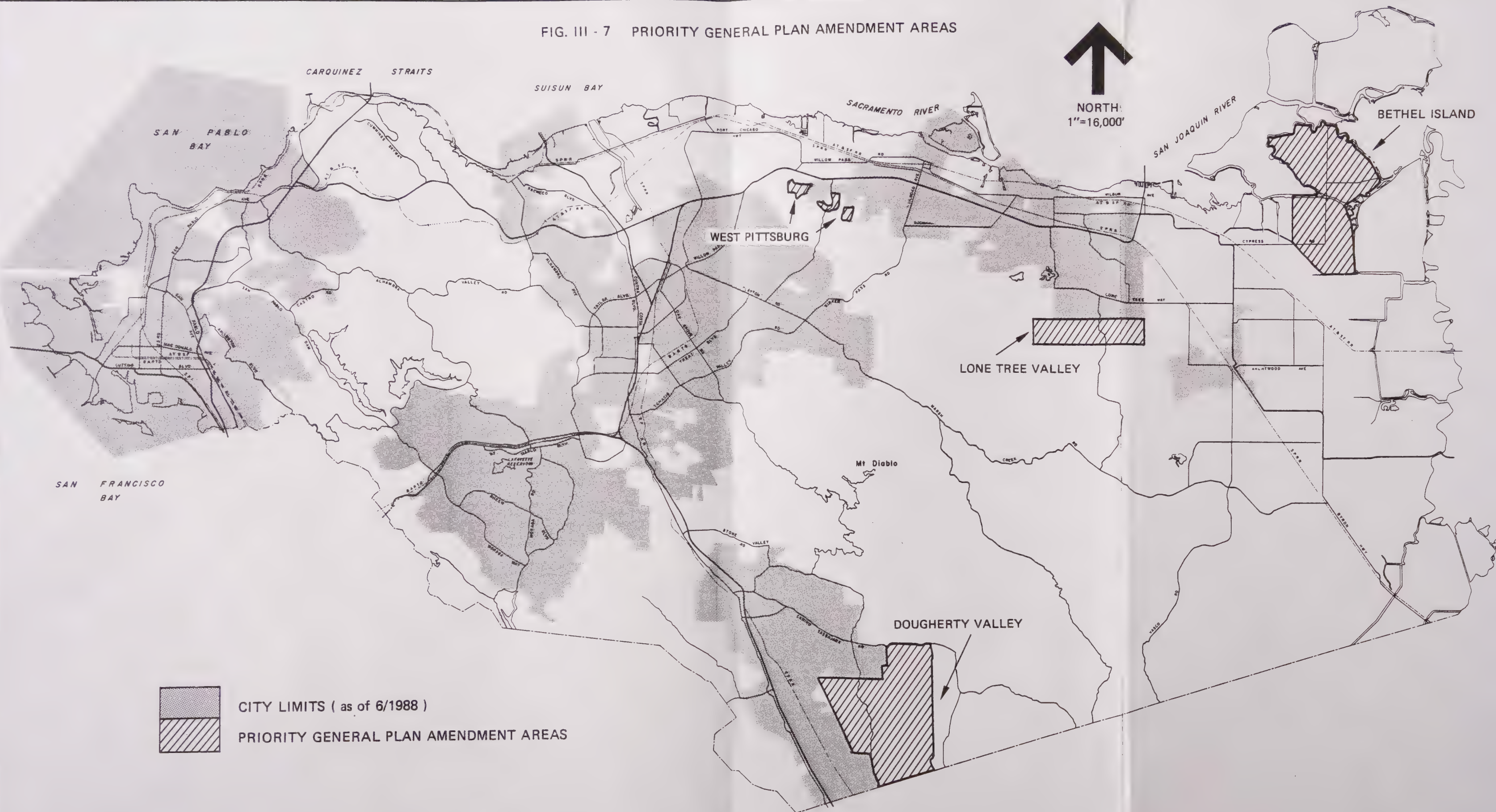
The intent of the "Priority General Plan Amendment" designation is to consider these areas first as amendments, prior to approving requests for authorization of General Plan Studies in open space areas which are significantly beyond the areas currently planned for urbanization. This reflects a desire to consider additions to urban land use designations which are contiguous to existing or planned urban uses, before considering more remote lands for such use.

The intent of the "Priority General Plan Amendment Area" designation is to require a comprehensive analysis of the impacts to determine the appropriateness of development in these areas' prior plan designations, which authorize urban development. This mandatory comprehensive analysis through the CEQA process shall include an in depth study of the cumulative impacts of the development upon countywide and subregional infrastructure systems such as, but not limited to, regional freeways, public transit, water and sewer systems, and human services (child care, schools, criminal justice, etc.).

In addition, the General Plan Amendment study shall consider the consistency of proposed amendments with the growth management program, the findings of the most recent annual development monitoring report, and jobs/housing goals. The study shall utilize a Countywide transportation computer model.

The Priority General Plan Amendment study shall also include an analysis of the cumulative impacts of development upon all significant Countywide resources, e.g. agricultural lands, open space and parklands, wildlife and plant species, historical, aesthetic, and scenic resources, air quality, and water resources, and shall include analysis of the economic impacts. It is not the intent of this General Plan review program to study the Countywide impacts of development in these General Plan Amendment Priority Areas. They will be considered after separate Environmental Impact Reports are prepared and their merits decided in the future.

FIG. III - 7 PRIORITY GENERAL PLAN AMENDMENT AREAS



IV. GROWTH MANAGEMENT ELEMENT

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CHAPTER IV

GROWTH MANAGEMENT ELEMENT

Introduction

This growth management program for Contra Costa County, included in the General Plan as a separate element, is primarily intended to implement the General Plan goal of providing for the public health, safety and welfare of its residents by preserving "quality of life". For purposes of this program, "quality of life" is defined as a given level of public amenity, service and facility capacity that is to be maintained for existing developments as well as provided for future development. Performance objectives included in this growth management program address these minimum infrastructure and service standards which must be met in order for growth to proceed. Land may not be eligible for development, even if it is properly designated and zoned, unless the performance standards of key controlling factors can be met.

This growth management program is intended to begin to incorporate the requirements set forth in Measure C, the Contra Costa County Transportation Improvement and Growth Management Program, passed by the voters in November, 1988. The measure consists of two main components. First, it establishes a retail transactions and use tax (a half cent sales tax) to generate funds to alleviate major existing regional transportation problems, with a portion of the funds to be returned to local jurisdictions. Second, the measure requires local jurisdictions to adopt growth management programs that ensure future residential and commercial growth pays for the infrastructure that is required to serve the development. The return of local discretionary funds to each jurisdiction is contingent upon adoption of a growth management program.

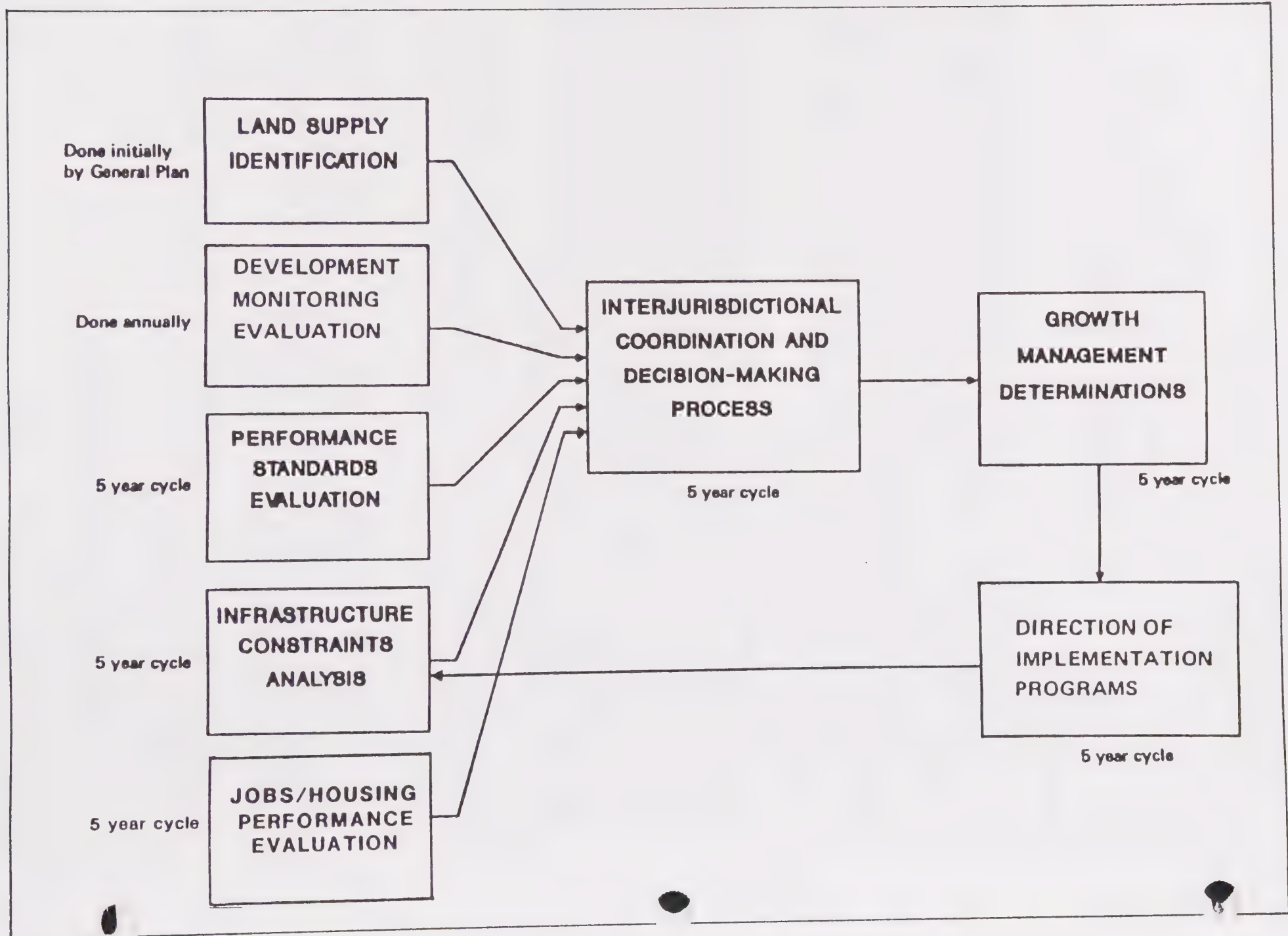
In order to successfully implement this program, Contra Costa must establish a new city-County growth management decision-making process. Such a process of interjurisdictional decision-making is not in existence anywhere else in the State; the establishment of one in Contra Costa County will be a pioneering effort.

Under this joint decision-making process, the County should negotiate agreements with the cities to prevent development from occurring within each of the city Spheres of Influence unless several items have been adopted: a city-County growth management plan with performance standards; a city Housing Element which provides for an appropriate jobs/housing balance for the sub-region; and a growth metering process and procedure for the region.

In order to implement the growth management program, five specific elements or technical tasks must be carried out. A flow chart illustrating the sequence of these tasks is included as Figure IV-1. The tasks are:

- (1) a land supply and development monitoring process;

FIG. IV - 1
GROWTH MANAGEMENT PROGRAM PROCESS



- (2) periodic review of performance standards and monitoring of infrastructure constraints;
- (3) interagency coordination and decision-making to provide information for the first two tasks and successfully implement the overall growth management program;
- (4) a jobs/housing performance evaluation to determine their relative balance within each sub-region of the County; and
- (5) growth management determinations, a process which identifies growth areas capable and incapable of meeting performance standards, and directs resources to overcoming any constraints.

These components are described in detail below.

Adoption of Performance Standards

The first step in the growth management program process is actually completed prior to the initiation of the five ongoing elements of the process. This step consists of the adoption of performance standards for public facilities and services in the County's General Plan.

New development shall not be approved in unincorporated areas unless the applicant can provide the infrastructure which meets the performance standards outlined in Table IV-1, or unless a funding mechanism has been established which will provide the infrastructure to meet the standards at the time the development occurs. In addition, the performance standards must be maintained throughout a project's development and economic life.

The traffic level of service (LOS) standards as applied to different types of land uses ("urban," "rural," etc.) in Table IV-1 are consistent with those categories established in Measure C. As part of the implementation of this growth management program, staff will prepare a detailed analysis of land use intensities in different parts of the County, using the Land Use Information System already developed for the General Plan Review program.

If the levels of service are not maintained or guaranteed prior to project approval, development shall be temporarily deferred until the standards can be met or assured as a condition of approval. Projects which do not meet the standards shall be scheduled for hearing before the appropriate hearing body with a staff recommendation for denial, on the grounds that the project is inconsistent with the goals, policies, and objectives of the Countywide General Plan.

Land Supply/Development Monitoring Analysis

The second step in the growth management process, an analysis of land supply and development monitoring, will commence at the beginning of each calendar year. Annual status reports on the implementation of the General Plan and its growth management program will be submitted to the Board of Supervisors and City Councils in June. This status report will fulfill the requirements of Government

Table IV-1
Growth Management
Performance Standards

Traffic Zone Management

Rural Areas:	Peak Hour Level of Service (LOS) of low C (Volume/Capacity Ratio= .70-.74)
Semi-Rural Areas:	Peak Hour Level of Service (LOS) of mid C (Volume/Capacity Ratio= .74-.79)
Suburban Areas:	Peak Hour Level of Service (LOS) of mid D (Volume/Capacity Ratio= .80-.84)
Urban Areas:	Peak Hour Level of Service (LOS) of high D (Volume/Capacity Ratio= .85-.89)
Central Business Districts (CBD):	Peak Hour Level of Service (LOS) of mid E (Volume/Capacity Ratio= .90-.94)

In the event that an intersection or portion of roadway exceeds the applicable service standards, the decision-making body shall deny the project without prejudice unless it can either establish appropriate mitigation measures, or determine that the intersection or portion of roadway is subject to a finding of special circumstances, consistent with those findings adopted by the Contra Costa County Transportation Commission pursuant to Measure C.

Table IV-1
(continued)

Water

Verification by the appropriate water agency that adequate water quantity and quality can be provided shall be required for approval of new development. Project approvals shall include a finding based upon the agency verification that capacity within the system to serve the specific development project exists if the project is built within a period of time specified by the agency, or capacity will be provided by a funded program or project condition of approval.

Sanitary Sewer

Verification by the appropriate sewer agency that adequate sewage collection and wastewater treatment capacity can be provided, shall be required for approval of new development. ~~Total/existing/capacity (supply)/utilization/demand/and/remaining/available/capacity/shall be/quantified/~~ Project approvals shall include a finding based upon the agency verification that capacity within the system to serve the specific development project exists if the project is built within a period of time specified by the agency, or capacity will be provided by a funded program or project condition of approval.

Fire Protection

A maximum running time of 3 minutes, and/or 1.5 miles from the first-due station, and a minimum of 3 fire fighters, shall be maintained in all central business districts, urban and suburban areas. In addition, a total response time (dispatch, plus running plus set-up time) of 5 minutes shall be maintained in CBD, urban and suburban areas for 90% of all emergency responses.

Public Protection

A sheriff protection service standard of 1.5 patrol officers per 1,000 residents within unincorporated portions of the County shall be achieved. A maximum response time goal for priority 1 and 2 calls of 5 minutes shall be used by the sheriff when making staffing and beat configuration decisions.

Table IV-1
(continued)

Parks and Recreation

Neighborhood parks: 2.5 acres required per 1,000 population.

Community parks: 1.5 acres required per 1,000 population.

Flood Control and Drainage

Require major new development to finance the full costs of drainage improvements necessary to accommodate peak flows due to the project. Limit development within the 100 year flood plain until a flood management plan has been adopted and implementation is assured. For mainland areas along rivers and bays, it must be demonstrated that adequate protection exists through levee protection or change of elevation prior to development. Development shall not be allowed in flood prone areas designated by the Federal Emergency Management Agency until a risk assessment and other technical studies have been performed.

Other services

The General Plan also includes specific policies, as opposed to performance standards, which address other services or facilities such as:

child care	schools
solid waste	public transit
hazardous waste	airports/heliports
scenic routes	ports/wharves
railroads	public meeting space
libraries	

Code 65400 (b) in the State planning and zoning laws, which requires that every city and County must prepare an annual report to the City Council or Board of Supervisors which summarizes the status of the General Plan and the progress that has been made in its implementation. The subsequent steps in the process, commencing with the performance standards evaluation, will occur on a five year cycle.

The land supply and development monitoring process is a two-part component designed as the basis for the periodic re-examination of lands available in the County for urban development. The availability of developable lands is then contrasted against the actual rate of growth which has been measured over the most recent period. In essence, this component is a land supply and demand tracking process. This process is designed to work in tandem with the other four components (performance standards/infrastructure constraints analysis, inter-jurisdictional coordination, jobs/housing balance analysis, and growth management determinations) in order to obtain an updated, working perspective of the current capacity of the County to accommodate growth.

The land supply and development monitoring process is prepared in an objective fashion by staff, using a set methodology defined and agreed to by the jurisdictions involved (the County, the 18 cities, the Local Agency Formation Commission (LAFCO) and the individual service providers). The re-examination of the land supply (initially set by the General Plan Review Program) will occur on an annual basis, in concert with the State Population Certification program which is already conducted jointly between the County and city planning departments. (This existing program involves each jurisdiction reporting to the County the number of housing completions in each census tract during the calendar year.)

Using a standard format and methodology should provide a high degree of confidence in the process and the established annual schedule should alert the development interests, city agencies, and special districts as to when their contribution will be critical. At the beginning of each annual cycle, formal notification will be given to each of the cities informing them that the land supply and development monitoring process is being initiated and requesting their active participation and cooperation.

The Land Use Information System (LUIS), developed in 1987 by County and city planning staffs and consultants for the General Plan Review Program, provides the foundation for tracking overall land supply, land absorption, and changing land uses in the County. The specific questions that must be answered during this process with the use of the updated LUIS data system are:

- o how many acres of vacant land in the County, specified by land use type, are identified as available for development?
- o what changes have occurred in these numbers since the previous evaluation?
- o how many acres of underutilized or previously developed land are available for redevelopment?
- o how many acres of land County-wide have been identified as unavailable for development based upon environmental, health and safety, public resource, or other conditions?

The County Community Development Department staff will prepare a report which examines the absorption rate (i.e. approved development projects) and the General Plan Amendment requests that have been received. The report on the status of development areas will rely upon residential and commercial/industrial building permit and other project approval information from the cities. This permit approval and General Plan Amendment application information will then be compared to the expected rate of residential and job growth projected for the jurisdiction over the planning period by the respective General Plans. The annual report will be forwarded to decision-making bodies for use in reviewing further General Plan Amendments which would alter the land supply component.

Performance Standards Evaluation and Infrastructure Constraints Analysis

While the second component of the growth management program (land supply and development monitoring) will be prepared on an annual basis, the final four components will be performed only once every five years. The data and analysis generated in the annual land supply and development monitoring reports will be aggregated for use in the tasks outlined in the following processes.

The intent of this third component of the growth management program, performance standards and infrastructure capacity evaluation, is to re-examine minimum allowable service standards for development projects set in the General Plan, and to determine the remaining available capacities of certain infrastructure facilities.

The growth management program for the Contra Costa County General Plan mandates the establishment of infrastructure performance standards for several different services or facilities, including circulation (traffic), sanitary sewage, flood control and drainage, water supply, police and fire protection and emergency services, and parks and recreation. These standards and policies attempt to define a quality of life by setting benchmark indicators of the minimum levels of service required for specific urban services. New development within unincorporated areas of the County will not be approved unless the standards and criteria are met, or can be assured of being met prior to issuance of building permits.

In general, the County's growth management program relies on the individual service providers to judge and set standards appropriate to their service area. It should be noted that most special service districts operate independently of the County and therefore are accountable only to their governing boards and, ultimately, the electorate. Every five years the performance standards would be reviewed by staff and the service providers by examining prior experience in approving or denying development applications based upon the districts' ability to serve. In addition, the service districts would be provided an opportunity to explain why certain standards are not being met and to explore measures to be taken to alleviate the situation. This information would then be used to evaluate whether the standards for the current review period were appropriate.

The second major task to be completed during this phase of the growth management program is an evaluation of the remaining infrastructure capacity in various areas of the County. Part of this evaluation will determine where and why certain existing urbanized areas are not being adequately served. The assumption is that adequate infrastructure capacities can be engineered and built to serve virtually any amount and location of growth, but that opportunities exist to plan for cost effective and efficient growth in areas where underutilized infrastructure capacities already exist or where the extension of services is relatively unconstrained compared to other areas.

The basic data requirements of this portion of the process include:

- o a determination of the remaining capacity for each facility or service provider based upon the defined performance standards, and identification of the geographic areas that could be served by the capacity;
 - o an itemization of funded infrastructure improvement projects, their location and expected date of completion, and the service area or population they are designed to serve;
 - o identification of urbanized areas with inadequate service, as defined by the adopted service standards;
 - o an itemization of the major capital improvements not now funded but needed to bring existing areas into compliance with the service standards;
 - o itemization of major capital improvements necessary to serve anticipated future development at the adopted service level, and the cost of these improvements;
 - o identification of major physical, economic and/or environmental constraints to the provision of service in a given area;
- and
- o identification of possible sources of funding for the improvements.

The object of the data gathering is to illustrate where future growth can and cannot occur without major investment in new or improved infrastructure systems, and to identify the level and source of financing required. Additionally, the exercise will allow the preparation of estimates of future required capacity based upon the performance standards. One outcome of this process will be to provide the service agencies with up-to-date information concerning where future growth is expected to occur, thus assisting in their capital facilities planning efforts.

To ensure that high density "leapfrog" growth does not occur, as a matter of policy, this growth management program mandates that new urban and central business district levels of development shall not be approved unless the development is within planned growth areas and is contiguous to existing or committed urban and central business district levels of development, respectively.

Jobs/Housing Performance Evaluation

The purpose of this step is to provide a basis for assessing the jobs/housing balance within each section of the County for the current five year review cycle, to assist the jurisdictions in the sub-regions in determining preferred locations for residential and employment growth, and to assist in focussing the direction of implementation programs.

The jobs/housing balance evaluation is based upon the County's Land Use Information System data base, augmented by the information provided in the development monitoring evaluation. The evaluation considers growth in housing units and employment and housing and employment availability, relative affordability and commute patterns, and to the extent that the data are available, price of the units and wage levels of the jobs added.

The jobs/housing performance evaluation will be used to identify areas where jobs or housing should be stimulated and encouraged. It would also be used to provide information about areas in which infrastructure deficiencies need to be corrected in order to facilitate a better jobs/housing balance.

Interjurisdictional Coordination and Decision-Making

The growth management program outlined here will not succeed without the cooperation and active participation of the County, the Local Agency Formation Commission, the 18 cities, and the service providers. These agencies and cities may view cooperation with the County's management program as a threat to their local authority over land use or other growth issues. The County's efforts to achieve cooperation must be aimed at persuading the cities and agencies that the growth management program will ultimately enhance their ability to meet their own General Plan goals. In addition, the County will participate in the cooperative planning process established by the County Transportation Commission for the purpose of reducing the cumulative regional traffic impacts of development.

Interjurisdictional cooperation would not require all of the cities and agencies to adopt the same goals, policies and implementation measures as will be included in the County's General Plan and growth management program. However, it would be desirable for the County to request that the cities and agencies adopt resolutions that specifically recognize and accept the management program and its premise.

A key commitment by the jurisdictions involves the dedication of a relatively small, but adequate, level of staff time to assist the County in gathering the required data for the necessary planning studies. Additional commitments must be made on the part of policymakers and staff to review the annual land supply and development monitoring reports, consider them when making important planning decisions, and to actively participate in the growth management determination process every five years.

Growth Management Determinations

Building upon the preceding components of the growth management program, the final aspect of the process involves using the reports that have been generated to make the important decisions about where future growth in the County should be encouraged in order to minimize infrastructure costs and to enhance the overall level of "quality of life". The process for making these determinations is as important as the determinations themselves. The process can help to achieve consensus among cities and service providers as to appropriate amounts and locations of new residential, commercial and industrial growth in the County. The growth management determination process should include the following steps, several of which are based upon information developed in the previous components of the program:

- o indicate on a County General Plan map the current city boundary lines, Spheres of Influence, and current service areas for all of the major utilities/facilities;
- o add to the base map information regarding improvements or extensions to service systems that have been completed since the last review period or improvements itemized in capital improvement programs, as well as constructed and approved development projects and adopted General Plan Amendments;
- o identify lands that have been determined to be undevelopable;
- o identify on the map the geographic areas with infrastructure constraints and the locations of development projects that have been denied due to failure to meet service standards;
- o review the annual land supply and development monitoring reports in conjunction with the performance standards and infrastructure constraints analysis reports to determine whether an adequate supply of vacant land is designated for urban use in the County and city General Plans, on both a Countywide and subregional basis, to allow the anticipated amount of urban development during the remainder of the twenty year period.

Growth management determinations shall be made in cooperation with the County Transportation Commission. In addition, it is anticipated that these growth management determinations will be made in a series of joint meetings conducted on a subregional basis with representatives of the cities, the Local Agency Formation Commission, and the service districts. Staff will present the base map and accompanying reports to the County and city Planning Commissions, LAFCO and service district boards, with a request that the agencies review the recommendations and make formal comments. After this review period is complete and appropriate changes, if needed, have been made, the map and reports will be recirculated to all of the jurisdictions in the County. The final action will be to request that the cities, LAFCO and service providers adopt resolutions in support of the recommendations and to initiate any General Plan Amendment hearings which may result from the review process.

Definitions of "Urban," "Suburban," etc.

The following definitions apply to the geographic terms used in the growth management program, as well as in other sections of this General Plan.

Rural

Rural areas are defined as generally those parts of the County that are designated in the General Plan for agricultural, open space or very low density residential uses, and which are characterized by medium to very large parcel sizes (10 acres to several thousand acres). These areas have very low population densities, usually no more than 1 person per acre or 500 people per square mile.

Semi-Rural

Semi-rural areas are defined as generally those parts of the County that are designated in the General Plan for agricultural, open space or very low density residential uses, with predominant parcel sizes down to as small as 2 to 3 acres. These areas may support viable agricultural operations, but the operations generally occur on small to medium sized lots. The areas are also characterized by clusters of farm housing or very low density "ranchette" development. The population densities in these areas usually range between 500 to 1,000 persons per square mile (1.0 to 1.5 persons per acre).

Suburban

Suburban areas are defined as generally those parts of the County that are designated in the General Plan for low and medium density single family homes; low density multiple family residences; low density neighborhood- and community-oriented commercial/industrial uses; and other accompanying uses. Individual structures in suburban areas are generally less than 3 stories in height and residential lots vary from about one fifth of an acre (8,000 or 9,000 square feet) up to 2 or 3 acres. Population densities in suburban areas fall within a wide range, from about 1,000 to 7,500 persons per square mile (1.5 to 12.0 people per acre).

Urban

Urban areas are defined as generally those parts of the County that are designated in the General Plan primarily for multiple family housing, with smaller areas designated for high density single family homes; low to moderate density commercial/industrial uses; and many other accompanying uses. Urban areas usually include clusters of residential buildings (apartments and condominiums) up to three or four stories in height and single family homes on relatively small lots. Many commercial strips along along major arterial road are considered urban areas.

Examples of urban areas in Contra Costa County are the older neighborhoods in Richmond, El Cerrito, Pittsburg, and Antioch and the downtown commercial districts in smaller cities such as Martinez, Danville, and Lafayette. Population densities in urban areas are usually at least 7,500 persons per square mile (12.0 people per acre). Employment densities in commercial areas may range up to about 15 jobs per acre.

Central Business District/Major Commercial Center

Central business districts or major commercial centers are defined as those areas designated in the General Plan for high density commercial and residential uses. They consist of either the downtown area of a major city in Contra Costa County (Concord, Walnut Creek, and Richmond) or a large business/office complex (such as Bishop Ranch or the Pleasant Hill BART station area). These areas are characterized by large concentrations of jobs and consist of clusters of buildings four stories or more in height. CBD's or major commercial centers generally have employment densities.



V. TRANSPORTATION AND CIRCULATION ELEMENT

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CHAPTER V

TRANSPORTATION AND CIRCULATION ELEMENT

Authority and Purpose

The Transportation and Circulation Element is prepared pursuant to Section 65302(b) of the California Government Code. This element has been a mandatory component of local General Plans since 1955. The Transportation and Circulation Element is required to address the location and extent of existing and planned transportation routes, terminals, and other local public utilities and facilities. It is further required to be consistent with the Land Use Element of the General Plan, accommodating future travel demand and contributing to, rather than inhibiting, the attainment of desired land use patterns.

The purpose of Contra Costa County's Transportation and Circulation Element is to establish a plan, policies, and implementation programs for future transportation system improvements that will satisfactorily accommodate the future travel demands to be generated by the projected size and spatial distribution of population and economic activities by 2005. It is intended to provide a plan and implementing measures for an integrated, multi-modal transportation system that will safely and efficiently meet the needs of all population segments and the transport of goods and materials.

A separate Scenic Routes Element was previously required as a mandatory General Plan component. However, State law now encourages the scenic routes' goals and policies be included within the Transportation and Circulation Element. Thus, this County plan merges the scenic route discussion and policies into this element. Biking, Hiking and Equestrian Trails Plans are included as part of the Recreation section of the Public Facilities/Services Element, which should be cross referenced for those subjects. It should be noted that some transportation related issues are included in other elements of the Contra Costa County General Plan. Policies that address the impacts of vehicle emissions on air quality, for example, are found in the Open Space/Conservation Element. The Noise Element also addresses transportation issues by identifying the noise impacts of traffic in the County, based upon the Roadway Network Plan and the traffic volumes that are forecasted on key roadways.

In view of the limited financial resources available for future transportation improvements, a major purpose of the element is to express policies that will promote the efficient utilization of existing transportation facilities and cost effective enhancements to these facilities. In addition, the element includes specific references to the programs set forth in Measure C, the Transportation Improvements and Growth Management initiative (half cent sales tax) passed by the voters in November, 1988. Finally, the Transportation and Circulation Element will establish a plan for future transportation facilities that will 1) help accomplish the planned pattern of future land uses, 2) not be growth-inducing, and 3) contribute to the protection of the environment.

Section 65300.5 of the California Government Code requires that the various elements of a General Plan comprise an integrated, internally consistent, and compatible statement of policies for the adopting agency. The law emphasizes that the Transportation and Circulation Element be coordinated with the Land Use Element. The transportation plan, policy, and implementing measures established by this element comply with the requirement by utilizing the same projections of future population and economic activity as does the Land Use Element, by using the same spatial distribution of future population and economic activity as expressed in the Land Use Element map, and by designing the transportation plans and policies to contribute to the achievement of the planned land-use pattern.

This Transportation and Circulation Element addresses roadways, transit, bikeways, and transportation system management (TSM) programs, as well as air, rail, and water transportation facilities. The format of the element is as follows:

- (1) an analysis of existing and future transportation needs, and a presentation of the computerized transportation modelling results that were conducted as part of this General Plan review program. Technical data are briefly summarized, with additional details made available in the Technical Appendix of this plan;
- (2) a presentation of the general goals and policies of the Transportation and Circulation Element, which are the framework of the proposed circulation plan;
- (3) the proposed circulation plan for the County, which includes several maps that illustrate the proposed circulation plan for roadways, transit, and bikeways. This section identifies the major improvements required to fulfill the plan;
- (4) the final section expresses the implementation program necessary to fund the transportation plan and accomplish other objectives of the plan.
- (5) a discussion and policies regarding scenic routes and specialized types of transportation systems (airports, ports and wharves, and railroads);

Existing and Future Transportation Needs

Travel conditions in Contra Costa County are greatly influenced by its location on the eastern side of the San Francisco Bay metropolitan region (see Figure V-1). Bridges, freeways, and trains link Contra Costa to every part of the Bay Area. Commute patterns are especially affected by the employment centers in San Francisco and Alameda County, and the residential areas of Solano County. Over 18 percent of all trips originating in Contra Costa are destined for another Bay Area county. Among work trips, the figure rises to 46 percent.

EXISTING TRANSPORTATION SYSTEM:

- Freeway / Expressway
- Other Highway
- BART



FIG. V - 1 REGIONAL TRANSPORTATION SYSTEM

Such intercounty travel patterns require that the Transportation and Circulation Element recognize the impacts of development outside Contra Costa County. The element accomplishes this task by incorporating projections of future population and employment activity in the remaining eight Bay Area counties for the year 2005. These projections were prepared by the Association of Bay Area Governments, and were combined with the Contra Costa data to estimate the influence of regional growth on the level and orientation of travel in the County. Estimates of inter-regional traffic, primarily from the Central Valley, were also included in the forecasts.

Existing Network

The county's transportation system is composed of federal and state highways, county roads, urban arterials, local and regional transit systems, bikeways, elderly and handicapped transportation services (paratransit), as well as air, water, and rail service. Each component of this transportation system is reviewed in this section.

The county's roadway network includes Interstates 80, 580, and 680, State Routes 24 and 242, and portions of State Route 4. Additionally, the roadway network includes numerous locally maintained arterials, streets and roads.

Of special importance to the county are the bridges and tunnels that link Contra Costa with the rest of the region. Four of the Bay Area's eight toll bridges link Contra Costa to other portions of the region. These include the Richmond-San Rafael Bridge (I-580), the Carquinez Bridge (Interstate 80), the Benicia-Martinez Bridge (Interstate 680), and the Antioch Bridge (State Route 160). Collectively known as the Caldecott Tunnel, three parallel tunnels on State Route 24 connect Contra Costa and Alameda counties. These bridges and tunnels represent major linkages in the region's highway network for which there are no alternative routes.

Four bus operators and the Bay Area Rapid Transit District (BART) provide public transit service in Contra Costa County. BART is the regional transit operator with two train lines and eight stations serving the county and providing connections to Alameda and San Francisco counties. BART supplements this service with express bus routes connecting outlying areas of the county with BART stations.

AC Transit serves portions of Western Contra Costa County with fixed route bus service to Northern Alameda County and downtown San Francisco. The northwest portion of the county is served by the Western Contra Costa Transit Authority (WestCAT), which operates demand-response (dial-a-ride) buses. Central Contra Costa County is served by fixed route buses operated by the Central Contra Costa Transit Authority (CCCTA, also called the County Connection). The eastern end of the county is provided both fixed route and demand-response bus service by the Eastern Contra Costa Transit Authority (Tri-Delta).

Park and Ride facilities have been established throughout the county to encourage the use of transit and high occupancy vehicles. BART maintains twelve park and ride lots providing over 11,800 free parking spaces for patrons of BART trains and express buses. The park and ride lots at BART stations operate at capacity and are considered a major constraint to increased ridership. Caltrans

has established thirteen park and ride facilities in the county providing over 660 spaces, which are used primarily as staging areas for carpools and vanpools.

County bikeways include both on-road and off-road facilities which are operated and maintained by the County, cities, and the East Bay Regional Park District. No specific data is available on the level of bicycle use in the county, but for the nine-county Bay Area, bicycles account for 2.3 percent of all trips and 1.7 percent of all work trips. Bikeways in the county are currently dominated by recreational users and have not been exploited for commute purposes. Further discussion, as well as goals, policies, and implementation measures, regarding bikeways are included in the "Parks and Recreation" section of the Public Facilities/Services Element.

Several air, water, and rail transportation systems and facilities are located within the county. A description and policies regarding Buchanan Field and the East County airports is found in the "Airports and Heliports" section. A similar description and relevant policies for water transportation facilities are included in the section "Ports and Proprietary Wharves", and rail related facilities and policies are described in the "Railroads" section.

Existing Travel Demand

The most comprehensive and recent data on local travel was collected during the 1981 Metropolitan Transportation Commission (MTC) Travel Survey. The travel behavior of nearly 5,000 Bay Area households were surveyed. The survey found that Contra Costa households generate more trips than the average Bay Area household (9.8 trips/day vs. 8.7 trips/day, respectively). Contra Costa households are also more likely to use a car for their trips than other Bay Area households (8.1 in-vehicle trips/day vs. 6.8 in-vehicle trips/day, respectively).

Existing travel conditions were evaluated by simulating 1985 travel demand using a computerized transportation model. 1985 was chosen as the base year for analyzing the transportation system because extensive land use data was available for that year. The number of trips made by Contra Costa residents for an average weekday in 1985 was estimated at 2,164,100.

An analysis of work trips is especially important since weekday peak period congestion problems are primarily caused by these trips. Work trips involve 22 percent (473,400) of weekday trips starting in Contra Costa. Forty six percent of these are destined for work locations outside Contra Costa. Specifically, 22 percent end in Alameda County and 12 percent end in San Francisco. These external trips are largely responsible for the congestion experienced on I-80, State Route 24, and BART.

Contra Costa imports fewer workers than it exports to other counties. An estimated 378,300 work trips are attracted to jobs in Contra Costa each weekday, which is only about two thirds as great as the number of work trips made by county residents. About 68 percent of the work trips destined for the county are made by county residents, 16 percent are made by Alameda County residents, and six percent are made by Solano County residents. The importation of workers from Alameda and Solano County contributes to the peak period congestion at the Caldecott Tunnel in the "reverse direction" and at the Benicia Bridge.

The computer model also estimated through traffic on roads traversing Contra Costa. During the AM peak hour, half of the traffic entering Contra Costa via the Richmond-San Rafael Bridge and the Carquinez Bridge is through traffic. These high levels of through traffic limit the county's ability to control traffic growth on I-80 and I-580.

Future Travel Demand

Travel demand forecasts were made for year 2005 using the computerized transportation model. Travel demand is primarily a function of the projected land-use in Contra Costa and neighboring counties. The General Plan is the basis for projected land use in Contra Costa. ABAG's projections for year 2005, described in Projections 87, is the basis for land use forecasts in neighboring counties. The ABAG data was adjusted to account for 163,000 surplus jobs that could not be matched to employed residents in the region. An assumption that 56,000 jobs would be matched with employees living in the Central Valley and south of Santa Clara County was incorporated into the transportation model. The remaining 107,000 surplus jobs were removed from the ABAG forecasts and were assumed to locate outside the Bay Area, or to occur after 2005.

An estimated 2,915,700 person trips will be generated in Contra Costa County each weekday by year 2005. This represents a 35 percent increase above the 1985 level. Work trips, a primary factor in peak hour congestion, will increase by 46 percent to 690,300 person trips per day. The rapid increase in work trips reflects a greater number of workers per household anticipated in the demographic forecasts. The characteristics of the future transportation system will determine the routes and mode of travel for these future trips. These characteristics will be described in later sections of the Transportation and Circulation Element.

Overall Transportation/Circulation Goals

- 5-A. To provide a safe, efficient and balanced transportation system.
- 5-B. To coordinate the provision of streets, roads, transit and trails with other jurisdictions.
- 5-C. To balance transportation and circulation needs with the desired character of the community.
- 5-D. To maintain and improve air quality standards.
- 5-E. To permit development only in locations of the county where appropriate traffic level of service standards are ensured.
- 5-F. To reduce cumulative regional traffic impacts of development through participation in cooperative, multi-jurisdictional planning processes and forums.
- 5-G. To provide access to new development while minimizing conflict between circulation facilities and land uses.

- 5-H. To ensure the compatibility of land uses adjacent to major transportation facilities.
- 5-I. To encourage use of transit.
- 5-J. To reduce single-occupant auto commuting.
- 5-K. To provide basic mobility to all sectors of the public including the elderly, disabled, and transit dependent.

Overall Transportation/Circulation Policies

Circulation Phasing and Coordination

- 5-1. Cooperation between the cities and the County shall be strongly encouraged when defining level of service standards.
- 5-2. Appropriately planned circulation system components shall be provided to accommodate development compatible with policies identified in the Land Use Element.
- 5-3. Transportation facilities serving new urban development shall be linked to and compatible with existing and planned roads of adjoining areas, and such facilities shall use presently available public and semi-public rights of way where feasible.
- 5-4. Development shall be allowed only when transportation performance criteria are met and necessary facilities and/or programs are in place or committed to be developed within a specified period of time.
- 5-5. Right of way shall be preserved to meet requirements of the circulation element and to serve future areas indicated in the Land Use Element.

Encroachment of unsuitable land uses adjacent to abandoned railroad right-of-way shall be prevented where such uses conflict with future uses of the right-of-way identified in the Land Use and Transportation/Circulation elements.

Circulation Safety, Convenience and Efficiency

- 5-6. Through-traffic circulation along arterials shall be improved by minimizing the number of new intersecting streets and driveways; and, when feasible, by consolidating existing street and driveway intersections.
- 5-7. Direct frontage and access points on arterials and collectors shall be minimized.
- 5-8. Existing circulation facilities shall be improved and maintained by eliminating structural and geometric design deficiencies.

- 5-9. Development of a secondary road system of expressways shall be considered as ~~a possible~~ part of the solution to congested freeways.
- 5-10. The use of freeways for community circulation shall be minimized by providing sufficient arterials and expressways.
- 5-11. The use of local and collector roadways for neighborhood circulation shall be encouraged.
- 5-12. Physical conflicts between vehicular traffic, bicyclists, and pedestrians shall be minimized.
- 5-13. Adequate lighting shall be provided for vehicular, pedestrian and bicyclist safety, consistent with neighborhood desires.
- 5-14. Curbs and sidewalks shall be provided in appropriate areas.
- 5-15. Emergency response vehicles shall be accommodated in development project design.
- 5-16. The design and the scheduling of improvements to arterials and collectors shall give priority to safety over other factors.
- 5-17. Efforts shall be made to increase parking for retail uses in areas where it is currently inadequate.
- 5-18. New development (including redevelopment and rehabilitation projects) shall provide adequate off-street parking, or contribute funds and/or institute programs to reduce parking demand.

Alternative Transportation/Circulation Systems

- 5-19. All efforts to use alternative transportation systems to reduce peak period traffic congestion shall be encouraged.
- 5-20. Use of alternative forms of transportation, especially transit, shall be encouraged in order to provide necessary services to transit-dependent persons and to help minimize automobile congestion and air pollution.
- 5-21. Improvement of public transit shall be encouraged to provide for increased use of local and commuter public transportation.
- 5-22. Rail transit extensions including protection and acquisition of necessary right-of-way and station areas, shall be encouraged along all freeway corridors.
- 5-23. Planning and provision for a system of safe and convenient pedestrian ways, bikeways and regional hiking trails shall be continued as a means of connecting community facilities, residential areas, and the business district, as well as points of interest outside the community utilizing existing public and semi-public right-of-way.

- 5-24 Rail transit facilities or additional high occupancy vehicle lanes proposed within a designated transit corridor shall be considered consistent with this General Plan.

Environmental Considerations

- 5-25. New arterial roadways shall be routed around, rather than through neighborhoods, to minimize traffic impacts on residential areas.
- 5-26. Street systems shall be designed and/or modified to discourage additional through traffic in existing residential areas.
- 5-27. Roads developed in hilly areas shall minimize disturbance of the slope and natural features of the land.
- 5-28. Local road dimensions shall complement the scale and appearance of adjoining properties.
- 5-29. Landscaping and maintenance of street medians and curb areas shall be provided where appropriate.
- 5-30. Appropriate buffers, such as soundwalls, bermed embankments, depressed alignments, and open space areas along major transportation facilities, shall be provided adjacent to noise sensitive land uses.
- 5-31. Consolidation of utility/drainage/transportation corridors shall be considered, where appropriate.

Roadway Designations and Design Criteria

This section describes the classifications of roadways shown in the accompanying Roadway Network Plan. The purpose of the classifications is to define the Circulation Element's intent for the function and design of roadways specified in the Roadway Network Plan.

Freeways

Freeways are defined as controlled-access, high speed roadways designed to carry high volumes of intercity, intercounty, and interstate traffic, although they may carry considerable local traffic in urban areas. This class of facilities is devoted entirely to the task of traffic movement, and performs no land service function. The following design standards shall apply to freeways:

1. Opposing travel lanes shall be separated by a median.
2. Access shall not be permitted from abutting parcels.
3. Auxiliary lanes may be provided from one interchange to another in densely developed urban areas which have closely spaced interchanges or where substantial travel demand exists between two consecutive interchanges.

Expressways

Expressways are defined as controlled-access, moderate speed roadways serving intercity or intercounty trips. This class of facilities is devoted entirely to the task of traffic movement, and performs limited land service function. Intersections may be at grade. The following design standards shall apply to expressways:

1. Opposing travel lanes shall be separated by a median if there are two or more travel lanes in each direction.
2. Access shall not be permitted from abutting parcels; however, access may be allowed prior to improvement of roadway segments to expressways standards if there is no alternative access route to a parcel.
3. Intersections shall occur only at arterials or other expressways.
4. Acceleration and deceleration lanes may be provided at intersections.

Arterials

Arterials move traffic to and from freeways, expressways or collectors and are part of an integrated system of major through roadways. Their traffic function is of county-wide or intercity importance, rather than serving primarily local area traffic. Arterials mainly serve to move traffic, but they normally also perform a secondary land service function.

1. Access from abutting parcels may be allowed but shall be secondary to protection of the traffic serving function of the roadway. Driveways and parking shall be restricted or may be prohibited altogether to improve capacity and safety.
2. Opposing travel lanes shall generally be separated by a median if there are two or more travel lanes in each direction.
3. Turning lanes and deceleration/acceleration lanes shall be provided at intersections with roadways designated as arterials or collectors, and are desirable at other intersections.
4. Rights-of-way at approaches to intersections with other arterials shall be sufficient to accommodate dual left-turn lanes.
5. Signalization shall generally give priority to through traffic on the arterial.

Collectors

Collectors are for internal traffic movement within a community, carrying traffic to arterials and between neighborhoods. They are low speed roadways that do not ordinarily carry a high proportion of through trips and are not, of necessity, continuous for great lengths. Collectors may also serve to provide

access to property, especially in rural areas. Access from abutting parcels in residential areas shall be discouraged. Driveways and parking may be restricted.

Local Roads

Local Roads are low speed, low capacity roadways that provide circulation within neighborhoods and access to adjacent land. Street design standards and layouts are used to discourage through traffic movements, avoid high travel speeds and volumes, and minimize neighborhood noise and safety impacts. Curbside parking is usually allowable.

Roadway Network Plan

The Roadway Network Plan, organized according to the functional classification system described above, is shown in Figure V-2. A more detailed 1:4000 scale map, showing collectors and the number of through-travel lanes recommended to serve travel demand by 2005, is enclosed in the map packet of this document. Major roadway projects recommended to fulfill the Roadway Network Plan are listed on Table V-1.

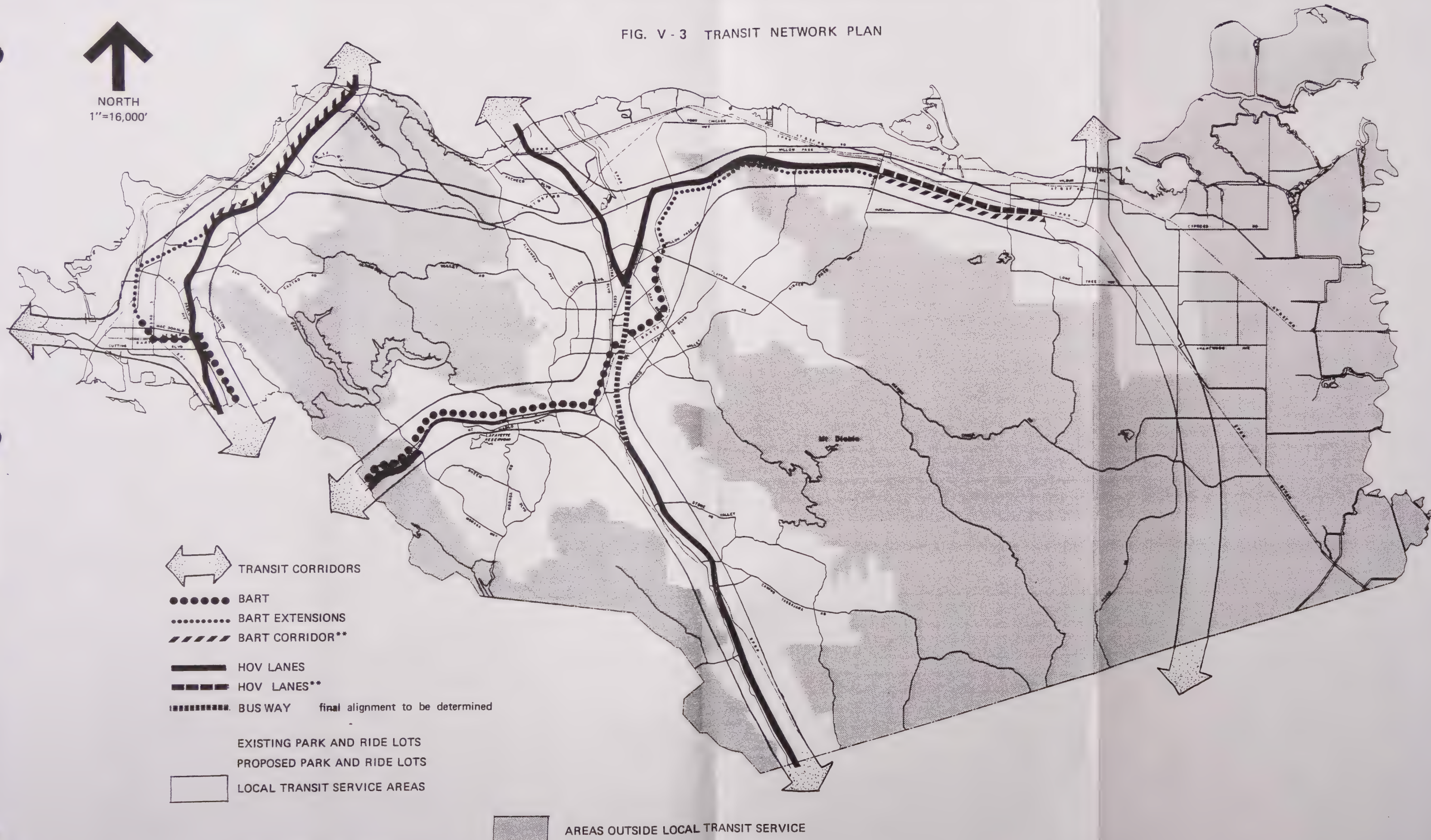
Even with the investment of \$3.4 billion in transportation improvements over the life of this plan, the amount of growth in the region and the attractiveness of travel by private automobile will make Level of Service (LOS) standards unattainable along portions of the following roadways: Treat Boulevard, Clayton Road, Ygnacio Valley Road, State Route 4 through Oakley west of State Route 160, Walnut Blvd., Delta Expressway south of State Route 4, Vasco Rd, Byron Highway, portions of San Pablo Ave, and San Pablo Dam Road east of I-80. Projects to increase the capacity of these roadways are either not fundable by 2005, or are undesirable. Recurring congestion in the county will be a way of life as long as county residents demand and respond to transportation improvements that heavily favor auto travel. The following sections on Transit and TSM projects are intended to help reduce our dependence on single-occupant vehicle commuting and provide a more balanced transportation system that encourages the use of transit, carpools and bicycles.

Transit Network Plan

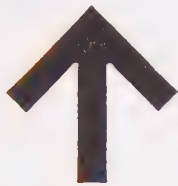
Policy concepts for transit development in the county are illustrated in the Transit Network Plan shown in Figure V-3. The plan contemplates two different roles for public transportation: 1) provision of basic mobility for those individuals without access to automobiles or who are otherwise transit dependent; and 2) provision of an alternative means of travel for people, especially peak-period commuters.

The Transit Network Plan establishes local transit service areas; areas where development densities will warrant the provision of fixed-route transit service by 2005. Fixed-route transit operations are the primary means of serving the basic mobility needs for transit dependent individuals in urban areas of the county.

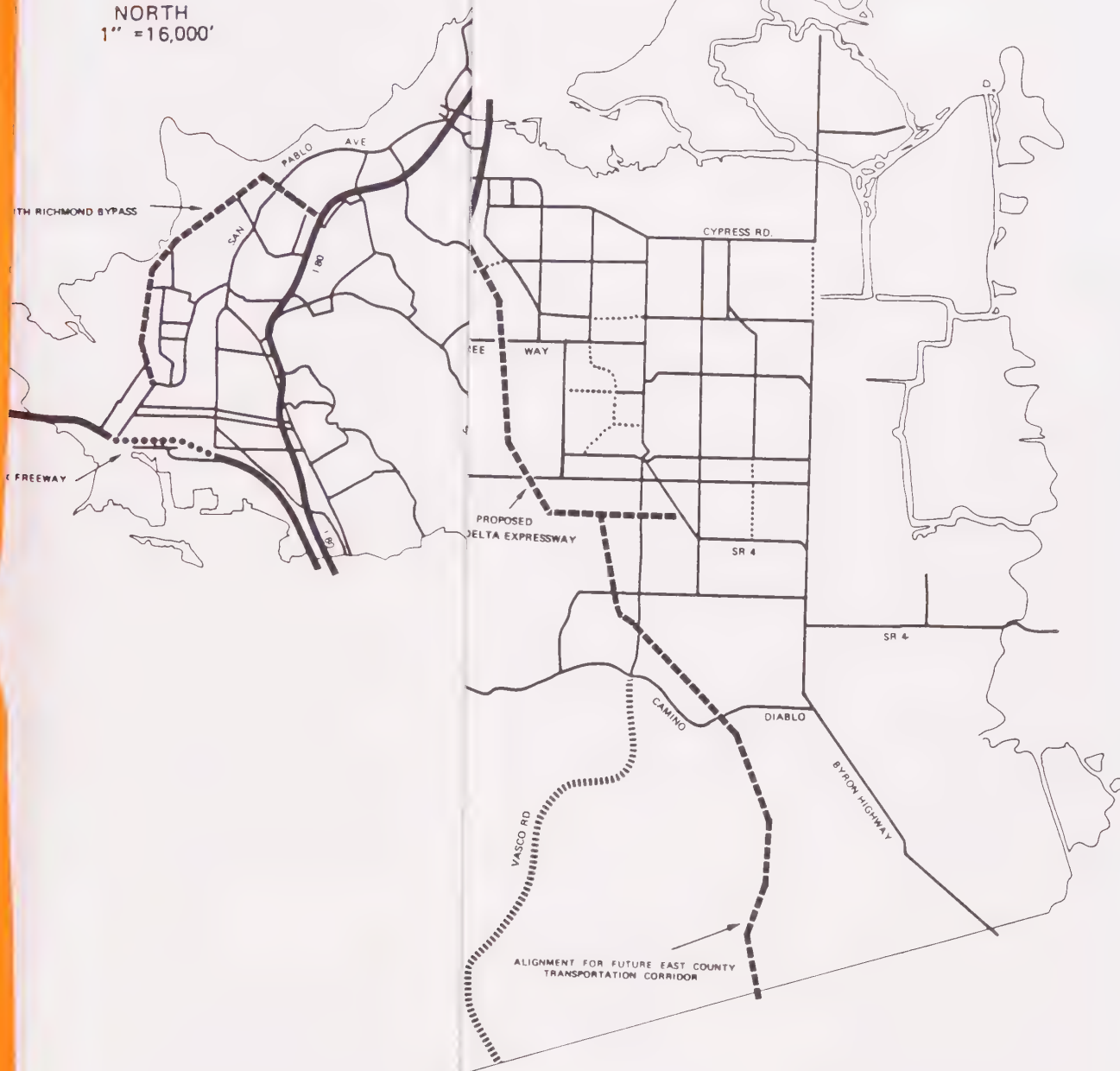
FIG. V - 3 TRANSIT NETWORK PLAN



**Not included in EIR analysis



NORTH
1" = 16,000'



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The Transit Network Plan establishes transit corridors along the county's freeways in order to provide high speed alternatives to driving alone on congested freeways. Within these corridors, the County will pursue the construction of rail transit extensions and high occupancy vehicle facilities, the establishment of express bus service, the integration of rail transit and bus service, and the promotion of carpools and vanpools. The major transit investments anticipated during the life of this plan are listed in Table V-1.

Table V-2 identifies areas where additional park and ride lot capacity will be needed to supplement parking at BART stations and to serve express bus routes and carpools/vanpools.

Transportation System Management Plan

Transportation System Management (TSM) is oriented towards encouraging efficient use of existing transportation facilities during peak periods of travel. TSM recognizes that large scale investments in highway and transit facilities are frequently limited by the availability of financial resources and adverse community reactions. TSM measures usually: 1) involve lower capital costs; 2) provide incentives designed to modify travel demand; 3) are implemented by local government or the private sector, and 4) give all travel modes equal consideration in providing access to development.

The County currently promotes TSM strategies in unincorporated areas through implementation of County TSM Ordinances 86-51 and 87-95. Even with these ordinances, and an investment of \$860 million in transit facilities, single occupant automobile travel is likely to remain the choice of 90% of county residents who commute. Additional efforts to revise access requirements for new development are needed to help promote a more balanced transportation system. Specifically, these revisions should investigate: 1) establishment of maximum parking ratios; 2) shifting long-term parking in commercial areas to short-term use; 3) incorporating pedestrian, bicycle, and transit access into site plans.

Bikeways

Bicycles are a viable mode of commuter transportation in the urban areas on either side of the Berkeley Hills and throughout eastern Contra Costa County due to favorable topography and weather. Development of a comprehensive bikeway system within these areas would provide further incentive to commute by bike. A comprehensive bikeway system is defined as a system of bike paths, bike lanes, and bike routes interconnected and spaced closely enough to satisfy the travel needs of most cyclists. Many existing bikeways are of a recreational design combined with pedestrian trails and located off-street. These facilities should be supplemented by on-street commuter bikeways that provide direct access to commercial uses.

"Bikeway" means all facilities that provide primarily for bicycle travel. The following categories of bikeways are defined in the California Streets and Highway Code.

TABLE V-1

Major Roadway and Transit Improvements

<u>Roadway Projects</u>	<u>Cost (\$000)</u>
1. I-80: New lanes, HOV lanes, new bridge	339,000
2. I-580: Knox Freeway, 6-lane freeway	115,000
3. SR-93: North Richmond Bypass	97,000
4. I-680: New lanes, SR 24 & SR 4 interchanges, HOV lanes, bridge expansion	930,000
5. SR-4: New lanes, HOV lanes	260,000
6. Delta Expressway, 2-lane expressway	49,000
7. Gateway Boulevard, 2-lane expressway	19,000
8. Contra Costa Commuterway, HOV lane/busway	46,000
Subtotal	1,855,000
<u>Transit Projects</u>	
9. BART: Capacity Improvements	158,000 *
10. BART: Pittsburg Extension	425,000
11. BART: Hilltop Mall Extension	275,000
Subtotal	858,000
GRAND TOTAL	2,713,000

* BART has programmed \$475 million for capacity improvements throughout the district during the next five years.

TABLE V-2

Future Demand for Park-and-Ride Lot Spaces*

<u>Area</u>	<u>Spaces</u>
Brentwood	1,300
Oakley-Bethel Island	1,300
Antioch	1,300
Martinez	600
Ygnacio Valley	1,200
Alamo	900
Danville	2,700
San Ramon	1,500
Lafayette-Moraga	1,700

* This plan also projects the need for over 10,000 park-and-ride lot spaces in Solano County to serve residents with jobs south of the Carquinez Strait.

- o Class I Bikeway (Bike Path or Bike Trail): Provides a completely separated right-of-way designated for the exclusive use of bicycles and pedestrians with crossflows by motorists minimized.
- o Class II Bikeway (Bike Lane): Provides a restricted right-of-way designated for the exclusive use or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted.
- o Class III Bikeway (Bike Route): Provides a right-of-way designated by signs or permanent markings and shared with pedestrians or motorists.

A countywide Bikeway Network Plan needs to be developed to encourage bicycling for commute purposes and to promote a more balanced transportation system. The plan should identify opportunities to connect existing on-street and off-street bikeways to serve the travel needs of bicyclists in urban areas of the County. Off-street bikeways would include Class I facilities. On-street bikeways would include Class II and Class III facilities. The major focus of this plan will be:

- o to establish a comprehensive bikeway system in unincorporated eastern Contra Costa County;
- o to establish a continuous bikeway system between neighboring jurisdictions; and
- o to provide direct connections between major activity centers and residential areas.

Overall Implementation Measures

a. Circulation Phasing and Coordination

- 5-a. Promote uniform roadway cross sections and traffic signalization standards between the County and the cities.
- 5-b. The County shall participate on committees with neighboring jurisdictions to monitor traffic congestion on regional corridors and to coordinate the planning, design, funding, and construction of transportation improvements serving unincorporated areas.
- 5-c. The County shall annually adopt a Five Year Capital Improvement Program to establish priorities for and schedule construction of transportation projects in unincorporated areas. The Capital Improvement Program shall contain projects to maintain desired Level-of-Service standards in unincorporated areas and to accommodate development that has been approved for construction.

- 5-d. The County shall establish and maintain an Area of Benefit program to collect fees on new development for roadway and related transportation improvements specified in the Circulation Element. Fees shall be based on the traffic generated by a use and the costs of transportation improvements necessary to maintain acceptable Levels of Service with the cumulative amount of development authorized by adopted plans.
- 5-e. Establishment of assessment districts shall be encouraged to supplement or replace fees on new development.
- 5-f. The County shall work with the cities to establish regional funding mechanisms to fund regional transportation improvements and to attract state and federal highway and transit revenues. Funding mechanisms may include sales taxes, gas taxes, or fees on new development.
- 5-g. The County shall coordinate its transportation planning efforts with the Contra Costa Transportation Commission.
- 5-h. The County shall work with cities to develop Specific Plans for abandoned railroad right-of-ways that traverse unincorporated areas.
- 5-i. Establish precise alignments plans for new or expanded arterials, expressways and freeways in order to reserve adequate rights-of-way for ultimate road system improvements indicated on the Roadway Network Plan (e.g. Delta Expressway, SR4, etc).

b. Circulation Safety, Convenience, and Efficiency

- 5-j. Design local streets so that the widths and curvatures fit the desired speed of travel.
- 5-k. Design a system of local and collector streets within a development to connect residences with arterials, activity centers and adjacent neighborhoods.
- 5-l. Reserve rights-of-way to ensure compatibility with transit service in the design of developments on appropriate freeway, expressway, arterial and collector routes.
- 5-m. Adopt design standards and right-of-way standards with typical sections showing relationships of pavement, median, sidewalks, lighting, and landscaping. Typical sections for roadways shall be based on the following minimum design standards:
 - o 12 feet per travel lane;
 - o 12 feet per turn lane;
 - o 8 feet per shoulder;
 - and
 - o Add 4 feet per shoulder if bike lanes are to be provided.

c. Alternative Transportation/Circulation Systems

- 5-n. Enforce County TSM (Transportation System Management) Ordinances 86-51 and 87-95, and encourage neighboring jurisdictions to adopt similar ordinances.
- 5-o. Construct a comprehensive program of park-and-ride lots, ~~to serve the demand/forecast by this Plan~~ in cooperation with the cities, transit agencies, and Caltrans, to serve the demand forecasted by this Plan.
- 5-p. Coordinate efforts with BART to expand parking facilities at or near stations.
- 5-q. Coordinate efforts with BART to extend train service along State Route 4 to Antioch and along I-80 to northwestern Contra Costa County.
- 5-r. In cooperation with the cities, Solano County and Alameda County, develop a long range transit improvement program for the I-680 Transit Corridor.
- 5-s. Coordinate efforts with BART and other jurisdictions to reserve rights-of-way, station sites, and other support facilities for rail extensions within the Transit Corridors identified ~~on~~ in the Transit Network ~~Map~~ Plan.
- 5-t. Coordinate efforts with all transit districts serving the county to provide for improved routing, bus frequencies ~~headway~~, facilities, and improved design of land development plans.
- 5-u. Provide safe pedestrian ways in the vicinity of schools and other public facilities, and in commercial areas, and provide convenient access to bus routes.
- 5-v. Construct the bikeways shown in the future Bikeway Network ~~Map~~ Plan and incorporate the needs of bicyclists in major roadway construction projects and normal safety and operational improvements.
- 5-w. Develop a parking program to maximize traffic flow on new and existing arterials and collectors by reducing or eliminating on-street parking, by providing off-street parking or parking bays to accommodate on-street parking, or enhancing transit or ridesharing services.
- 5-x. Encourage Caltrans to investigate the feasibility and effectiveness of ramp metering on freeways in the county, and if feasible and effective, support implementation.
- 5-y. Encourage Caltrans to expedite the incorporation of Alameda, Contra Costa and Solano County into the Bay Area Traffic Control System Program to improve the flow of traffic on the region's freeways.

- 5-z. Encourage Caltrans to construct a system of commuter lanes (high occupancy vehicle or HOV lanes) on new or expanded freeways within the Transit Corridors identified on the Transit Network Map Plan, and work with the cities and Caltrans in establishing additional commuter lanes on new or expanded expressways and regional arterials.
- 5-aa. Encourage Caltrans to construct the I-80 HOV facility for reversible operation, westbound for AM commute and eastbound for PM commute, and provide more opportunities for HOV access and egress along the facility.
- 5-ab. Support the establishment and operation of commuter transit services, serving the Transit Corridors identified on the Transit Network Map Plan, with emphasis on service to major employment centers and transit stations.
- 5-ac. Develop a systematic program of interjurisdictional traffic operations improvements, such as signal coordination, low-cost geometric improvements, parking restrictions, etc.
- 5-ad. Strongly encourage Caltrans to utilize private sector engineering services to expedite State highway projects.
- 5-ae. Design and allow for on-road bikeways on arterials and collectors as an alternative to car travel where this can be safely accommodated.

Scenic Routes

Introduction

This scenic routes plan is intended to add considerations of roadway road corridor appearances and aesthetics to the scope of the County General Plan. This plan has two basic purposes: it enables the County to request that the State designate state routes to the State highways program, while at the same time providing a local scenic route implementation program.

Such a plan provides recognition of the perception we have of our surroundings while traveling through the County. Presently Contra Costa County has numerous roadways that pass through areas affording pleasurable views. The number of such roadways where scenic quality exists will diminish, however, unless protected. Their character is changed through improvements to them or when land adjacent to them is developed.

This plan will identify a Countywide scenic route system and ensure that new projects approved along a scenic route are reviewed to maintain their scenic potential. Most scenic routes depend on natural landscape qualities for their aesthetics and many formally designated scenic routes have been established in predominantly rural areas in the past, but neither natural beauty nor rural settings are necessary to the designation of scenic routes.

Goal

- 5-J. To identify, preserve and enhance scenic routes in the County.

Policies

- 5-32. Scenic corridors shall be maintained with the intent of protecting attractive natural qualities adjacent to various roads throughout the county.
- 5-33. The planning of scenic corridors shall be coordinated with and maximize access to public parks, recreation areas, bike trails, cultural attractions, and other related public developments.
- 5-34. Scenic views observable from scenic routes shall be conserved, enhanced, and protected to the extent possible.
- 5-35. The existing system of scenic routes shall be enhanced to increase the enjoyment and opportunities for scenic pleasure driving to major recreational and cultural centers throughout this and adjacent counties.
- 5-36. Multiple recreation use, including trails, observation points, and picnicking spots, where appropriate, shall be encouraged along scenic routes.
- 5-37. Continued efforts shall be made in cooperation with the California Department of Transportation to achieve State scenic route recognition for appropriate routes in the County.
- 5-38. Design flexibility shall be encouraged as one of the governing elements for aesthetic purposes in the construction of roads within the scenic corridor.
- 5-39. For lands designated for urban use along scenic routes, planned unit developments shall be encouraged in covenant with land development projects.
- 5-40. Provide special protection for natural topographic features, aesthetic views, vistas, hills and prominent ridgelines at "gateway" sections of scenic routes. Such "gateways" are located at unique transition points in topography or land use, and serve as entrances to regions of the County.

Definition and Maps of Scenic Routes

For the purposes of this plan, the following definitions will apply; they should aid in understanding the relationship of the scenic roads to their environs.

A **scenic route** is a road, street, or freeway which traverses a scenic corridor of relatively high visual or cultural value. It consists of both the scenic corridor and the public right-of-way.

The **public right-of-way** includes the roadbed and adjacent lands in public control. It includes lands utilized for roadway protection, storm drainage, public utilities, pedestrian travel, and roadside plantings. Usually this land is owned in fee or dedicated to local jurisdictions or the State. It should also include cycling or hiking trails, roadside rests, or turnouts, etc. Public projects in the right-of-way should be designed and carried out recognizing the purpose of this plan.

Semi-public rights-of-way include railroads, canals, or power transmission lines.

A **scenic corridor** is usually much wider than the road right-of-way and extends to the contiguous areas beyond it. Width of scenic corridors will vary greatly depending upon the present degree of development, land forms, topography, and the nature of scenic quality. The scenic corridor consists of much of the adjacent area that can be seen from the road. It is within this area that development controls, dedication, and the purchase of easements or lands in fee simple will be required, and public projects will be reviewed for compliance with this plan. Controls should be applied to retain and enhance scenic qualities, restrict unsightly use of land, control height of structures, and provide site design and architectural guidance along the entire scenic corridor.

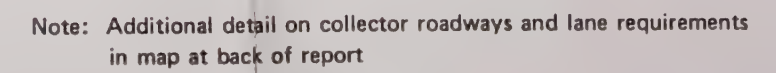
Route 24 from the Alameda County line to the Interstate 680 interchange, and Interstate 680 south of that interchange to the Alameda County line, are existing State designated scenic routes within the **State Scenic Routes program**. Route 4 from Hercules to the intersection with Railroad Avenue is proposed for State designation as is State Route 84 to the Delta.

While the State Scenic Routes plan forms the skeletal framework for the **County Scenic Routes program**, Figure V-4 identifies the other roadways which form the Countywide scenic routes plan. Inclusion on this map provides direction to local staffs to review projects in a fashion which is compatible with the scenic qualities of these roads.

Implementation Measures

- 5-af. Develop and enforce guidelines for development along scenic routes to maintain the visual quality of those routes.
- 5-ag. Develop a corridor improvement program including an interagency joint action and ordinance development program, to protect and enhance scenic qualities.
- 5-ah. Consider the visual qualities and character of the corridor in reviewing plans for new roads, road improvements, or other public projects. This should include width, alignment, grade, slope and curvatures of traffic islands and side paths, drainage facilities, additional setbacks, and landscaping.

PROPOSED NORTH RICHMOND BYPASS



- 5-ai. Attain development project design flexibility within the scenic corridor through application of the Planned Unit Development District Zoning.

Airports and Heliports

Introduction

The county has one general aviation airport with a second one being funded for development. Additionally, there are several private airfields which operate in the county and requests for heliports have been received from time to time. This section adds policies to the County General Plan which guide the use of airports, private airfields and heliports.

The overall goals and policies for airport and heliport operations in the county are outlined in the next two sections. A more detailed description and policies for Buchanan Field and the East County airport are included in separate sections below. Finally, special policies required by the Airport Land Use Commission are included following the discussion of the two airports. The noise contours for these airports are included within the Noise Element of this Plan.

Goals

- 5-K. To encourage the development and operation of two general purpose public airports in the county.
- 5-L. To allow heliports, restricted to appropriate locations, that would add to the economic well-being and safety of the county.

Policies

a. Overall Policies

- 5-40. Aesthetic design flexibility of development projects within a scenic corridor shall be encouraged.
- 5-41. Regulate the location of private airfields and heliports to minimize their impacts on adjacent residents, sensitive receptors, and to ensure public safety.
- 5-42. Protect the Byron Airport environs from urban encroachment through a combination of land acquisition, easement acquisitions and land use regulations.
- 5-43. Work with adjacent cities to ensure that Buchanan Field Airport environs are developed and redeveloped in ways which protect the public safety and maintain the viability of the airport.

b. Policies Regarding Buchanan Field

Buchanan Field is located on a 578 acre site in the unincorporated area of Contra Costa County adjacent to the cities of Concord and Pleasant Hill; a very small portion of airport property is located within Concord. It is a general use airport and has limited scheduled commuter airline service.

The land use plan designations for this airport are shown on the Land Use Element map. Land uses allowed on the airport property should enhance the airport function and be consistent with its goals and operational requirements. Most of the site is designated "Public/Semi-Public" to reflect the airport use.

Special policies of this plan that apply to Buchanan Field are as follows:

5-44. The Transportation and Circulation Element requires the construction of the Diamond Boulevard extension from Concord Avenue northerly to Center Avenue as a condition of approval of development projects on the western side of the airport to major new uses.

5-45. The Buchanan Field Golf Course exists on the southwest edge of the airport adjacent to the intersection of Concord Avenue and I-680. The road improvements called for by this plan, and in particular the Diamond Boulevard extension, will require modification to the existing golf course. This plan encourages the maintenance of a small golf course or some other recreation facility in the location of the golf course.

Passive recreational uses are appropriate in the approach path of the airport and will constitute an environmental enhancement and balance to serve as amenities for the development at the airport. Some maintenance responsibilities for these recreational facilities may be required of the airport projects.

5-46. Trail connections surrounding the airport are required. A riding, hiking and bicycle trail is shown along the Walnut Creek Flood Control Channel. Hiking and bicycle trails are shown flanking the airport on its remaining perimeter. These trails will serve as an amenity to the new office facilities in the area, as well as providing a connection to a regional trail linkage along the Walnut Creek Channel.

c. East Contra Costa County Airport

The County is in the process of developing a new full-service general aviation airport at a site adjacent to the existing Byron Airpark. The project location is approximately three miles south of the town of Byron and $2\frac{1}{2}$ miles north of the Alameda County line. The Byron Highway passes one mile to the northeast. Long range plans call for construction of a runway capable of serving 250,000 operations annually, and construction of parking to accommodate 250 aircraft.

The airport acquisition and development will be jointly funded by the County, the State and Federal Governments. The airport boundaries will encompass approximately 1,270 acres of which only 230 acres will be developed for airport purposes. In addition to the land to be acquired in fee, an additional 2,000 acres of conservation easements will be acquired to preclude additional residential development and to control noise, height of structures, etc. In addition, aviation easements within two miles of the airport will also be acquired, later if needed, to assist in controlling development.

The expressed intent of the County is to open a second airport free from urban encroachment, and to prevent the establishment of related commercial or industrial development around the planned airport. Water and sewer services will be limited to serve only the airport; utilities will not serve growth on the adjacent properties. It is also for this reason that extra rights-of-way beyond the airport development proper are being acquired. Additionally, no residential development or sensitive receptors, e.g. hospitals, schools, etc., should be allowed within the projected 60 CNEL noise contours for the new airport.

Special policies of this plan that apply to the East County Airport are as follows:

- 5-47. The County shall acquire fee title and/or conservation (development rights) easements to an appropriate amount of buffer land around the planned East County Airport.
- 5-48. The buffer land or conservation easements acquired around the airport shall ensure that incompatible uses will not be allowed to locate within the safety zone.
- 5-49. Establishment of commercial, industrial or residential development around the planned airport shall not be allowed.
- 5-50. Water and sewer services to the airport will be limited to serve only the airport properties; utilities will not serve growth on the adjacent properties.
- 5-51. No residential development or sensitive receptors, e.g. hospitals, schools, etc., shall be allowed within the projected 60 CNEL noise contours for the new airport.

d. Special Policies Regarding the Airport Land Use Commission

The Public Utilities Code requires that the intent and purpose of adopted Airport Land Use Commission (ALUC) plans and policies be incorporated into the County General Plan. The following policies apply to the two County airports:

- 5-52. Structural heights shall be designated by the Federal Aviation Regulations (FAR) Part 77 surfaces associated with the various runway designations shown on the latest Airport Layout Plan.

- 5-53. The Structural Height Limits defines maximum structural height. Height limits will be placed on new buildings, appurtenances to buildings, all other structures and landscaping in accordance with the Airport Layout Plan except in special instances when for reasons of safety the Commission may impose a more restrictive structural height.

An applicant for any structure within the Airport Land Use Commission Planning Area proposed to penetrate any height limit surface shall submit an aeronautical analysis which specifies the proposed project's effect on airport instrument procedures for all runways, the effect on airport utility, and the effect on overall aviation safety. If, after reviewing the aeronautical study and other related information, it is determined that the proposed project would not have an adverse effect on safety and airport utility then, the project may be approved for heights other than those indicated by the FAR, Part 77, Structural Height Limits.

- 5-54. All projects involving new construction or a building exterior alteration which would increase building height within the Airport Land Use Commission Planning Area and which would exceed the height limits of the structural heights limits plan, which are over two stories in height and within 3,000 feet of the side or end of any runway, or which are within the 60 dBA CNEL noise contour, or which are within the safety zone areas shall be submitted to the Commission for review. Projects which require approval or permit shall be submitted to the Airport Land Use Commission.
- 5-55. New construction or building exterior alterations located in areas of terrain penetration as defined by the ALUC Structural Height Limits Plan will be reviewed on a case by case basis with consideration given to topography, flight patterns, existing vegetation and any other factors which might affect airspace and safety. Maximum building height, including all appurtenances, shall be no greater than 45 feet above maximum ground elevation at the site.
- 5-56. Temporary structures, such as construction cranes or antennae, which would penetrate any adopted height limit surface, may be allowed after a case by case review, provided that obstruction lighting and marking is installed and a two week notice of temporary structure emplacement is provided by the proponent to the County Manager of Airports. Temporary structure emplacement shall be subject to reasonable time limit.
- 5-57. The County may require an exterior building materials reflectivity analysis upon review of the proposed types of building materials, building height, and building location and use on site. Such analyses should be required for development of any structures on or adjacent to public airports which would be over three stories in height and utilize reflective surfaces. Reflectivity studies shall address the potential for pilot and airport operation interference, proposed mitigation to any identified potential interference resulting from reflected sunlight, and any other subject areas related to reflectivity which the County may deem appropriate. The County may include some or all of the proposed mitigation in its project approval process.

5-58. Within each safety zone designated by the ALUC, the following are incompatible uses:

- (a) Any light source which would direct a steady light or flashing light of red, white, green, or amber color associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA approved facility.
- (b) Any construction which would cause sunlight to be reflected toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at the airport.
- (c) Any use which would generate smoke, attract large concentrations of birds, or may otherwise adversely affect safe air navigation within a safety zone.
- (d) Any use which would generate electrical interference that would be detrimental to the operation of aircraft and/or aircraft instrumentation.
- (e) Any use which would utilize or cause to be stored highly toxic, inflammable or otherwise hazardous materials which, in the event of an aircraft accident, could be released into the surrounding environment to threaten human life or property.
- (f) Within the safety zone clear area, any use which involves the erection of a permanent above ground structure other than FAA approved facilities.
- (g) Within the safety zones, excluding the clear areas, any use which on a regular basis would result in a density (excluding streets) in excess of 30 persons per acre or one person/500 square feet of gross building flood area, whichever is less.
- (h) Any of the following uses: new single and multiple family residences, shopping centers, restaurants, schools, hospitals, arenas and other places of public assembly.

5-59. The following are suggested uses within the safety zones (excluding the clear areas) for Buchanan Field:

- (a) agriculture;
- (b) open space;
- (c) warehousing;
- (d) light industry;
- (e) parking of automobiles;
- and
- (f) low occupant density public uses, such as sewage treatment plants.

5-60. The following are suggested uses within the safety zones (excluding the clear areas) for the East Contra Costa Airport:

- (a) agriculture;
- (b) open space;
- (c) low intensity park and recreation uses;
- (d) low occupant density public uses;
and
- (e) parking of automobiles.

5-61. Airports and heliports may be allowed by issuance of a land use permit in zoning districts found by the Board of Supervisors to be suitable for such uses.

Implementation Measures

- 5-aj. Create a new zoning district for County airports similar to the Planned Unit (P-1) District zone which provides for public review of on-site projects, and rezone both airports to that district.
- 5-ak. Review county ordinance code provisions and consider the suitability of each zoning district for the establishment of airports and heliports.
- 5-al. Continue to regulate all heliports in the county by the land use permit process.
- 5-am. Create a new zoning district to regulate private land use on the two public airports.

Ports and Proprietary Wharves

Introduction

Contra Costa has historically been oriented to its waterfront, since the western end of the county is located on San Francisco and San Pablo Bays, and the northern shoreline fronts along the Carquinez Strait, Suisun Bay and the Sacramento-San Joaquin River Delta. Industrial development in the county was concentrated along the shoreline, and this legacy remains today with port-oriented heavy industrial uses located in scattered locations from Richmond to Antioch. These industrial uses are important to the county economic base and the continued use of appropriate shoreline areas for heavy industries that rely on water traffic should be protected.

There is one major deep water port in the county, the Port of Richmond, located in that city. In addition, there are several private ports or proprietary wharves, which serve large petroleum refineries and other industrial firms.

Goals

- 5-M. To maintain the economic viability of the county's existing ports, wharves, and shipping lanes.

Policies

- 5-62. The continued use of existing ports and proprietary wharves shall be recognized and encouraged.
- 5-63. Water-oriented industrial uses which require deep water access shall be encouraged along the shoreline, while other industrial uses which could be located on inland sites shall be discouraged.
- 5-64. New or replacement proprietary wharfs shall be allowed adjacent to industrial use areas, as long as environmental safeguards are followed and public access to the shoreline is provided.
- 5-65. The County shall advocate maintenance of deep water channels at a depth that keeps ocean vessel use viable from San Francisco to the Concord Naval Weapons Station.
- 5-66. The Concord Naval Weapons Station deep water port should be utilized for private port use if the property ever becomes excess government property.

Implementation Measures

- 5-an. The County shall continue to work with the Bay Conservation Development Commission, the State Lands Commission, and other appropriate agencies to ensure adequate deep water access is provided to industries along the county's shoreline.
- 5-ao. The deep water site at Selby should be reserved for a water-related industrial use.

Railroads

Introduction

There are four railroad lines which currently carry freight within Contra Costa County. The Southern Pacific railroad line, now owned by the Denver and Rio Grande Western, stretches 60 miles from Richmond to the Alameda County line near Clifton Court Forebay. The SP line is a high speed double track between Richmond and Martinez, and carries by far the most freight traffic of all the railroad corridors in the County. From Martinez, the SP track splits, with one track crossing the river to carry freight up the Sacramento Valley to the northwestern U.S., and one track continuing through Antioch, Brentwood, Byron and into the San Joaquin Valley and points south.

The 55 mile long Atchison, Topeka and Santa Fee (ATSF) railroad corridor roughly parallels the SP line between Richmond and Hercules, where it then turns inland through rural Franklin Canyon running south of Route 4 to the industrial areas east of Martinez. From there it again closely parallels the SP (and Sacramento Northern/Union Pacific) tracks as it passes through Pittsburg and Antioch, and then through Oakley and across the Delta to Stockton. Four daily AMTRAK passenger trains operate on the SP tracks between Richmond and Pittsburg, and on the ATSF tracks between Pittsburg and the San Joaquin County line.

Two smaller freight lines operate in the county. Union Pacific controls the subsidiary Sacramento Northern line from Clyde to Pittsburg, and the Bay Point and Clayton rail line serves the Concord Naval Weapons Station. The other major railroad corridor in the county, the SP tracks running north-south between Concord and through the San Ramon Valley to the Alameda County line, was abandoned in the 1960's and has been largely acquired by the County.

All these lines are directly involved with the economic vitality of the county, since numerous industries depend on the rail movement of heavy goods such as oil and chemical products, coal, lumber, and automobiles, as well as containerized cargo. It is possible, however, that all or portions of these rail lines may be declared unprofitable by their parent companies in the future. As such, a formal petition may be filed with the Interstate Commerce Commission asking permission to abandon the corridors and sell them. This plan, thus, needs to consider alternative land uses for the corridors in the event of any abandonment.

Goals

- 5-N. To protect the existing railroad rights-of-way in the county for continued railroad use, utility corridors, roads, transit facilities, trails and other public purposes.

Policies

- 5-67. Railroad rights-of-way shall generally be designated for Public/Semi-Public uses to reflect their importance to the County's economy.
- 5-68. Encroachments into railroad rights-of-way by urban uses which would impact current rail operations or preclude future use of the corridors for trails or other public purposes shall be limited.
- 5-69. Trails shall be considered an appropriate interim use of an abandoned railroad right-of-way.
- 5-70. Encroachment of unsuitable land uses adjacent to abandoned railroad right-of-way shall be prevented where such uses would conflict with future uses of the right-of-way identified in the Land Use, and Transportation and Circulation Elements.

Implementation Measures

- 5-ap. Implement County Ordinance #87-19, entitled "Railroad Corridor Combining District", in a fashion which protects the integrity of the existing corridors.
- 5-aq. If railroad right-of-ways are abandoned by railroad service, work toward acquisition of the right-of-ways for trail development, utilities corridors and for other public purposes.
- 5-ar. If railroad uses are to be abandoned, initiate a general plan revision study to determine the best long term use of the right-of-ways.
- 5-as. Upon notification of an action to abandon a rail line, initiate a committee of affected jurisdictions to help determine the long term use of the rail corridor.

VI. HOUSING ELEMENT

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CHAPTER VI

HOUSING ELEMENT

Authority and Purpose

This chapter of the Contra Costa County General Plan presents goals, policies, and other information related to the provision of housing for existing and future residents of the County. The purpose of the Housing Element is twofold: 1) to present specific policies and actions for housing provision, based on the premises and policies of the residential land use component of the county General Plan's Land Use Element; and 2) to provide an adopted county housing plan that will help the County and its political subdivisions to qualify for housing aids and grants.

State law contains requirements for Housing Element content that are far more specific than the requirements for other elements of the General Plan. This chapter provides a summary of brief information regarding the county's housing market and housing needs, followed by a statement of the County's goals, policies, and implementation measures as they relate to housing.

It should be noted that Contra Costa County adopted a Housing Element in 1985, which was certified by the State Department of Housing and Community Development. **The intent of this General Plan is not to provide all of the technical information which is now required by State law, but only to revise some of the goal, policy, and implementation statements included within the Housing Element.** Therefore, the 1985 County Housing Element is incorporated into this General Plan by reference, with the changes in policy language as noted in the following pages.

However, recently adopted amendments to the State Housing Element law require Bay Area jurisdictions to add significant new data to their Housing Element and update progress on the implementation of housing programs and policies, and to submit it for State review in 1990. Because of the timing requirements of this new law, the County plans to compile the new technical housing data only once, in 1990.

The Housing Element became a required element of all local General Plans in 1967. Since that time, several changes have been made to portions of the State Government Code regarding Housing Elements. Administrative guidelines have also been prepared to address Housing Element requirements. In 1980, new legislation was adopted (AB 2853) which clearly set forth the regulations for Housing Elements, clarifying conflicting requirements and administrative interpretations. Subsequent legislation adopted in 1984 established additional requirements for Housing Elements, including the requirement that the needs of the homeless be addressed in the element (Government Code Section 65583 (a)(6)).

The requirements of Government Code Section 65583 state that the housing element shall consist of an identification and analysis of existing and projected housing needs and a statement of goals, policies, quantified objectives, and scheduled programs for the preservation, improvement, and development of

housing. The housing element shall identify adequate sites for housing, including rental housing, factory-built housing, and mobile homes, and shall make adequate provision for the existing and projected needs of all economic segments of the community.

The legislation goes on to define the contents of a local community's housing needs assessment. It requires communities to establish goals, objectives, and policies related to housing maintenance, improvement, and development, and to adopt a five-year housing action program. The legislation also sets forth a procedure for periodic revision and updating of the Housing Element.

Under State law, the Housing Element must be consistent with the other elements of the General Plan. The Housing Element is specifically intended to set forth and expand upon County policies for residential land uses as defined and described in the Land Use Element of the General Plan.

By designating the locations and characteristics of residential areas, and by serving as the basis for land development regulations, the Land Use Element is the central component of the General Plan for relating housing to other General Plan subjects. The following is a very general identification of these relationships.

Residential areas are located according to conditions evaluated in the Open Space/Conservation, Safety, and other elements. They are further located according to relationships with employment areas, major recreation facilities, and major roads and utilities covered in the Public Facilities/Services, Transportation and Circulation, Land Use, and other elements. The internal design and physical characteristics of residential areas are influenced by building density policies of the Land Use Element, by street patterns reflected in and anticipated by the Transportation and Circulation Element, by Noise Element requirements, and by parks and open spaces addressed in the Public Facilities/Services and Open Space/Conservation Elements, respectively.

The General Plan affects housing not only through natural resource and physical design considerations, but also through population (social) characteristics and distributions inherent in the policies of the Land Use Element. Land Use Element policies also address the provision of jobs and local economic development potential. Public services are addressed in several elements, as well as in the studies upon which the elements are based and the public programs which implement the elements.

Current Setting

Contra Costa County is part of the larger Bay Area housing market. Within its boundaries, the county includes several sub-markets which are determined by a combination of topography, historical development patterns, and social and economic phenomena. The county is large and diverse but can be divided into three primary sub-areas: West County, which is highly urbanized with a developed industrial base; Central County, which is a rapidly urbanizing area with much new office and light industrial development; and East County, which was primarily agricultural but which is now experiencing considerable residential development. This section of the Housing Element presents a summary of the major trends and factors affecting the county housing market.

1. Households are being formed at a rate twice that of population growth.

While Contra Costa County continues to be a growing area, population growth rates have moderated. In the decade of the 1970's, the county population grew 18.1 percent. This contrasts with the more rapid population growth rates of the 1940's, 1950's, and 1960's, when population increased 197.6 percent, 36.8 percent, and 36.9 percent, respectively. The growth rate for the decade 1980-1989 is projected to be almost the same as last decade, 18.4 percent.

While population growth has moderated, the rate of household growth has not. The trends toward smaller families, higher divorce rates, and people marrying and starting families at a later age have resulted in a continued high rate of household formation, and therefore a continued high demand for additional housing units. To illustrate, the decade of the 1970's experienced a 41.8 percent increase in the number of housing units in the county, compared with the 18.1 percent rate of population increase during that period.

2. The County's labor force has also grown.

The number of employed residents has also increased. The growth of the labor force was 48% between 1960 and 1970 and was 46% between 1970 and 1980. The labor force is expected to increase by 31 percent between 1980 and 1990. In 1980 there were 307,500 persons in the labor force while there were 202,200 jobs in the county. By 1990 there is expected to be a labor force of 402,400 persons while the number of jobs is expected to be 287,500. Thus, although many jobs have been added during the 1980's, Contra Costa is still a net exporter of labor.

Major increases in employment are expected to occur in the retail/wholesale, services, construction, and finance/real estate/insurance sectors. Major new office development in Central Contra Costa County accounts for much of the recent employment growth. This substantial increase in employment-generating land uses is occurring at a time when the capacity of the Central County communities to absorb new growth is becoming more limited.

3. Households are becoming older and smaller.

Reflecting national and state trends, the county's population is aging. Concurrently, family sizes are becoming smaller. Both of these trends are expected to continue, and suggest that the demand for housing could shift from larger single family homes to smaller single family units or condominiums. This trend could be reinforced due to the inability of many families to afford the larger single family units.

4. The "affordability gap" is most severe among the county's lower-income renters and buyers.

Contra Costa County is among the most affluent counties in the state. According to the Franchise Tax Board, the median income for joint tax returns in 1987 was over \$45,000, the second highest in the State. The

median income for all tax returns in the county was over \$26,000. At the median, the ability of the county's population to afford the county's housing stock has been reasonably good. The county's affordable housing stock is, however, concentrated in the East County area and to a lesser extent, in West County.

Further, the ability of the county's lower-income population to afford housing continues to be a major problem. As an example, less than two percent of the new housing built in the county in 1983 was affordable to lower-income homebuyers. To many lower-income and young families, the only alternative is to rent.

After years of lagging, rents in the county are now rising at a rate faster than the rate of inflation. Rents are also increasing at a faster rate than the incomes of renters. Until additional rental construction occurs, the combination of high demand and low vacancies will contribute to an increasingly severe rental affordability gap, particularly among lower-income renters.

5. To address these conditions, new housing development in the county will need to be appropriately priced and distributed.

In the aggregate, adequate land is available to accommodate new housing needs identified for the unincorporated portion of the county by the Association of Bay Area Governments (ABAG). The price/rent and geographic distribution of the new housing may not, however, address the identified need in an appropriate manner. The planning and development review process is one means of ensuring that new housing development is appropriately priced and provides for a range of housing types that meets specific county needs.

Goals

Adequate and Affordable Housing

- 6-A To make decent, safe, and affordable housing available to all Contra Costa County residents.
- 6-B To make available a wide range of housing types and residential densities to meet the needs of all age groups and household sizes within Contra Costa County's population.
- 6-C To accommodate the housing needs of future, as well as existing, Contra Costa County residents in a manner consistent with available and planned community facilities and services.

Housing Accessibility

- 6-D To ensure that fair housing opportunities prevail for all Contra Costa County residents regardless of age, sex, family status, race, color, creed, national origin, or physical, mental, or developmental disabilities.

- 6-E To make housing available throughout the county, in reasonable proximity to employment centers, for all demographic and economic segments of the county's population.

Housing Conservation and Neighborhood Preservation

- 6-F To conserve and enhance the quality and diversity of neighborhoods within Contra Costa County.
- 6-G To preserve the existing housing supply as a community resource within the financial means of Contra Costa County households.
- 6-H To upgrade substandard housing, and to halt and reverse neighborhood deterioration where appropriate.

Special Housing Needs

- 6-I To make suitable housing available to accommodate Contra Costa County residents with special needs, such as elderly or disabled persons.
- 6-J To ensure that temporary and emergency housing is available.

Policies

Adequate and Affordable Housing

- 6-1 A balance of housing types, tenures, densities, and price ranges shall be encouraged, supported, and stimulated.
- 6-2 Land use regulations and development review procedures shall be designed to ensure an optimal effect on the quality and cost of housing and neighborhoods.
- 6-3 Appropriate financial and non-financial assistance shall be committed to reducing the cost of development for very low- and low-income housing. Such assistance shall also be considered for moderate-income housing.
- 6-4 The County shall coordinate and work with public and private entities in order to encourage the development of communities that are served by adequate and appropriate facilities and services.
- 6-5 The County shall encourage housing that will conserve and more efficiently use energy resources.
- 6-6 The creation of public/private partnerships shall be encouraged for the purposes of facilitating low- and moderate-income housing production.

6-7 Available programs to provide housing for low- and moderate-income households shall be utilized and advanced through cooperation and coordination among the County, cities, and regional, state, and federal agencies.

6-8 Housing opportunities shall be provided for all economic segments of the population throughout the County.

Housing Accessibility

6-9 Equal opportunity in housing shall be promoted.

6-10 Economic development activities, particularly those which improve housing opportunities and their closeness to jobs, shall be promoted.

Housing Conservation and Neighborhood Preservation

6-11 Utilization of the existing housing stock for low- and moderate-income shall be encouraged through extensive participation in the Section 8 and other rent subsidy programs in all parts of the county.

6-12 Conservation of the county's housing stock shall be promoted.

6-13 Neighborhoods shall be provided with housing and community development assistance to arrest decline and stabilize neighborhoods.

Special Housing Needs

6-14 Resources to address special housing needs shall be provided.

6-15 Farm worker and farm family housing shall be permitted in agricultural areas to meet the needs of locally employed transient and permanent farm workers and family farm workers.

Implementation Measures

Adequate and Affordable Housing

6-a Periodically review the capacity of the County General Plan for its capacity to accommodate a variety of housing types and prices throughout the County.

6-b Periodically review the County General Plan and Zoning Ordinance with the intent of removing policies and provisions which may unduly restrict the full development of residential properties in general, and low- and moderate-income housing in particular.

- 6-c Apply the more extensive use of flexible techniques such as Planned Unit Developments and mixed residential and commercial developments to obtain a balance of housing types, tenures, densities, and price ranges.
- 6-d Work with public agencies to identify vacant or surplus public lands that may be suitable for residential developments in order to maximize their availability at below market prices, where feasible, and appropriate to facilitate low- and moderate-income housing developments.
- 6-e Encourage the creation of second units in appropriate single family residential areas, as required by State Legislation.
- 6-f Encourage the development of land within the density range specified by the Land Use Element of the General Plan by considering reduction of the number of units below that found in the General Plan only when environmental, site design, infrastructure, or site constraints exist.
- 6-g Review and act upon requests for the conversion of residential rental apartments to condominium ownership in order to mitigate the effect of conversions on tenants, and to establish physical and operational standards for conversions for the purpose of buyer protection.
- 6-h Allow increases in density for developers providing housing for low- and moderate-income households, in accordance with California Government Code Section 65915 et seq. Consider other incentives such as modified development standards consistent with factors such as age of residents, family size, etc., fee waivers and the transfer of development rights.

Incentives may be considered upon submittal of a proposal for the development of low- and moderate-income housing by a developer, or the County, on its own motion, may so propose. Consideration of incentives shall be carried out concurrently with applicable development review procedures. The Community Development Department may, subject to action by the Board of Supervisors, respond to proposals for development incentives for low- and moderate income housing.

- 6-i Encourage throughout the County the utilization of alternate housing types such as manufactured housing, mobile homes, self-help housing and cooperative housing, through Zoning Ordinance provisions and other available means.
- 6-j Evaluate the feasibility of establishing mechanisms to protect low-cost multi-family rental housing sites.
- 6-k Continue to maintain an inventory of land available for multi-family development.
- 6-l Continue to improve development review procedures to reduce the amount of processing time necessary while ensuring reasonably adequate review time for those interested in participating in the process.

- 6-m Continue to review the County Subdivision and Zoning Ordinances and required development fees, and/or dedications to determine their impacts on the development of low- and moderate-income housing.
- 6-n Continue to use Community Development Block Grant Funds and Housing Authority funds and other funds to reduce the cost of developing very low- and low-income housing.
- 6-o Continue to commit at least 50 percent of the Community Development Block Grant Funds to activities which expand housing opportunities.
- 6-p Coordinate with housing interests to initiate referenda to obtain authority pursuant to Article 34 of the State Constitution so that additional low- and moderate-income rental housing may be developed, constructed, or acquired utilizing state or local financial assistance.
- 6-q Encourage the creation of a network of housing advocates to assist in educating people and addressing the housing needs of lower-income people.
- 6-r Consider the waiver of all or part of development fees for developments serving very low- and low-income persons.
- 6-s Encourage other units of government including special service districts to waive development fees for developments serving very low- and low-income persons.
- 6-t Utilize at least 20 percent of tax increment funds created through the establishment of redevelopment areas to facilitate very low-, low-, and moderate-income housing.
- 6-u Review additional areas for their redevelopment potential in order to eliminate blight which creates economic or social liabilities on the community, to expand employment opportunities and expand the supply of very low-, low-, and moderate-income housing.
- 6-v Maximize the effect of public funds utilized to facilitate the production of very low-, low- and moderate-income housing by primarily using loans and financial leverage.
- 6-w Pursue the establishment of a housing development fund(s) from appropriate revenue sources.
- 6-x Implement components of the Public Facilities/Services Element of the General Plan to serve as guides for the development and financing of public facilities and services to developing areas.
- 6-y Develop measures to mitigate the impact of new development on public facilities and services.

- 6-z Continue to emphasize the preservation and maintenance of existing communities by utilizing, where appropriate, Community Development Block Grant Funds and other funds to provide for public improvements which will protect residences and the health and safety of its residents.
- 6-aa Continue to encourage and participate actively in the development of infrastructure financing plans tailored to specific local circumstances.
- 6-ab Encourage the use of cost effective energy efficient features in new housing developments and on existing homes through the implementation of Title 24 of the California Administrative Code as it pertains to energy conservation.
- 6-ac Utilize the development review process as a means of encouraging and obtaining appropriate energy conservation and site design measures.
- 6-ad Review existing and future Specific or Area Plans, as well as proposed amendments to the General Plan, in order to identify opportunities to provide added residential density without disrupting the character of established areas.

Housing Accessibility

- 6-ae Continue to issue municipal bonds to finance homeownership and rental housing in a manner consistent with achieving the desired public purposes by giving priority to projects serving low- and moderate-income households.
- 6-af Develop an implementation program for the provision of available planning and program information to developers and sponsors interested in low- and moderate-income housing.
- 6-ag. Encourage the formation of, and continue to work with broad-based and single-purpose, non-profit housing development groups.
- 6-ah Continue to provide available planning and program information to cities in developing their Housing Elements and housing programs.
- 6-ai Continue to work with the Association of Bay Area Governments to organize and implement area wide housing opportunity efforts.
- 6-aj Continue to prepare an annual Housing Assistance Plan (HAP), as part of the County application for federal assistance under the Community Development Block Grant program (the HAP documents the condition of the County housing stock, the housing assistance needs of its low- and moderate-income households, and establishes goals for the provision of assistance in meeting the needs).

- 6-ak Continue to participate in appropriate housing programs initiated by agencies of the State of California, including but not limited to the Department of Housing and Community Development and the California Housing Finance Agency.
- 6-al Continue to participate in appropriate housing programs initiated by agencies of the U.S. Government, including but not limited to U.S. Department of Housing and Urban Development, and Farmers Home Administration.
- 6-am Continue to use the Housing Authority as a liaison between the County and its cities relative to the need for rental housing and the need for additional land use opportunities to accommodate rental housing.
- 6-an Continue to work with the County's federal and state legislative delegation to develop and encourage the development of appropriate housing legislation.
- 6-ao Encourage the County Housing Authority and non-profit Fair Housing groups to continue to provide apartment owners and managers with information on the Section 8 and other rent subsidy programs.
- 6-ap Encourage the County Housing Authority to pursue the Federal and State governments in order to obtain additional rent subsidy funds.
- 6-aq Encourage the spatial deconcentration of low- and moderate-income households throughout the county.
- 6-ar Encourage the use of available housing assistance funds to assist in the stabilization or revitalization of neighborhoods containing concentrations of low- and moderate-income households where a comprehensive neighborhood preservation program is being undertaken.
- 6-as Encourage the development of mixed-income family housing developments, to the extent feasible given financial constraints and funding programs.
- 6-at Continue to encourage and support responsible organizations which educate, inform, mediate and otherwise assist in the promotion of fair housing.
- 6-au Provide information on fair housing laws and refer discrimination complaints to appropriate community organizations and State and Federal agencies.
- 6-av Evaluate the appropriateness of a local fair housing ordinance, and local enforcement of fair housing laws.
- 6-aw Commit at least 20 percent of County Community Development Block Grant funds to activities which promote economic development.

- 6-ax Continue to pursue financial assistance from State and Federal programs to attract economic development activities in depressed areas of the County.
- 6-ay Monitor the effects of industrial and commercial employment on housing demand, transportation, urban services and other factors.
- 6-az Encourage the provision of an appropriate mix of housing densities, types and prices in reasonable proximity to employment centers.

Housing Conservation and Neighborhood Preservation

- 6-ba Continue present housing rehabilitation programs providing zero-interest and low-interest loans to lower-income homeowners.
- 6-bb Continue and expand existing rental housing rehabilitation programs which offer loans to investor owners who provide lower-income housing.
- 6-bc Pursue appropriate Federal and State housing rehabilitation funds.
- 6-bd Explore the feasibility of obtaining housing rehabilitation funds for homeowners and renters through the issuance of tax exempt revenue bonds, or by using available state programs.
- 6-be Continue the enforcement of the Housing, Electrical, and Fire Prevention Codes, and Health and Safety Regulations by appropriate agencies, and explore the feasibility of reviewing such codes and recommending appropriate changes in order to lower building costs.
- 6-bf Evaluate the feasibility of establishing a certificate of compliance program in which housing code inspections are completed prior to the rental of a previously vacant unit.
- 6-bg Continue to encourage appropriate self-help housing improvement efforts.
- 6-bh Encourage financial institutions to increase the supply of conventional financing in low- and moderate-income neighborhoods specifically and encourage lenders participating in the Community Investment Fund to concentrate their lending activity in neighborhoods where low- and moderate-income households predominate.
- 6-bi Explore the feasibility of postponing property tax adjustments due to the rehabilitation of housing units through public programs.
- 6-bj Encourage the residence of owners in rental developments by considering the provision of priority access to rental housing rehabilitation loans.
- 6-bk Study alternative measures to ensure the health and safety of residents of older mobile homes which are substandard.

- 6-bl Continue to use Community Development Block Grant funds for public improvements in designated lower-income areas.
- 6-bm Periodically review existing and proposed General Plans, development applications, ordinances, and implementation programs, to determine whether they are supportive of programs to preserve neighborhoods.
- 6-bn Seek other sources of funding to augment the Community Development Block Grant funds in undertaking physical improvement activities which further neighborhood preservation.
- 6-bo Continue to encourage the participation of local residents in planning and developing neighborhood preservation strategies.
- 6-bp Continue to encourage the development of new housing and other appropriate uses on undeveloped land within existing neighborhoods.
- 6-bq Continue to encourage private development which furthers and supports the neighborhood preservation process.
- 6-br Conduct surveys of communities on a periodic basis to detect signs of early decline, and to evaluate the impact of previous neighborhood preservation efforts.

Special Housing Needs

- 6-bs Utilize Community Development Block Grant funds, Housing Authority funds, and other funds to assist feasible projects designed to address special housing needs.
- 6-bt Evaluate the feasibility of a housing rehabilitation program designed to provide for the needs of the physically handicapped.
- 6-bu Encourage the implementation of innovative semi-independent living programs such as congregate and shared housing for elderly and other population groups.
- 6-bv Support non-profit groups and housing organizations to organize and implement programs which foster or implement self-help projects which create or maintain rural and urban housing opportunities.
- 6-bw Establish an ad-hoc task force comprised of County, city, and non-profit agencies and private individuals to assess the needs of farmworkers as identified and proposed alternative measures to address the needs.
- 6-bx Continue to encourage and support the provision of temporary emergency shelter for the homeless and others experiencing short-term shelter needs.

- 6-by Offer incentives for developers providing housing for senior citizens, such as increases in density in addition to that specified in the Land Use Element of the General Plan, including the density bonuses provided for in California Government Code Section 65915 et seq., and modified development standards such as reduction in required parking, fee waivers, etc.

Incentives may be considered upon submittal of a proposal for the development of senior citizen housing by a developer, or the County, on its own motion, may so propose. Consideration of incentives shall be carried out concurrently with applicable development review procedures. The Community Development Department may, subject to action by the Board of Supervisors, respond to proposals for development incentives for senior citizen housing.

- 6-bz Review the County Ordinance Code to ensure that farm worker and farm family member housing are permitted in agricultural areas.

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CHAPTER VII

PUBLIC FACILITIES/SERVICES ELEMENT

Authority and Purpose

Although the State General Plan law does not require jurisdictions to prepare an element relating to the provision of public facilities or service, the law allows local governments to adopt any general plan element, or address any subjects which relate to the physical development of the county or city. This Public Facilities/Services Element establishes goals and policies which address the vital infrastructure and public services that must be provided to maintain the quality of life of existing and future county residents. Although not a mandatory element of the General Plan, the Public Facilities/Services Element must be internally consistent with the other elements of the Plan, just as the mandatory elements must be.

The Public Facilities/Services Element is organized into functional sections which address the following issues:

- o financing improvements and public services;
- o water service;
- o sewer service;
- o drainage and flood control;
- o public protection;
- o fire protection;
- o solid waste management;
- o hazardous waste management;
- o parks and recreation facilities; and
- o schools and child care;
- and
- o other public facilities.

Each section is subdivided into sections that include an introduction with background information, followed by adopted goals, policies, mapping of facilities or services (if applicable), and, lastly, a listing of implementation measures.

The Public Facilities/Services Element is most closely related to the Land Use and the Transportation and Circulation Elements, since it supports the goals and policies of those elements related to growth management and the coordination of land use, circulation and public facilities. Consistency with the Safety Element is achieved through goals and policies which afford protection related to police and fire service, threats from flooding, avoidance of health hazards associated with inadequate provision of potable water and sanitary sewer facilities, and the management of hazardous materials. Consistency with the Housing Element is reached through the provision of infrastructure which supports the shelter role of housing. Consistency with the Open Space/Conservation Element is guaranteed through the policies related to premature extension of infrastructure and public services.

Financing Improvements and Public Services

Introduction

The subject of financing capital improvements and funding ongoing public services relates to the General Plan in a number of ways:

- o the Land Use Element map defines the extent of urban growth and development throughout the County. The designation of urban land use will create a proportional need for additional facilities and services;
- o as the basic policy document regulating growth and development, the General Plan contains service standards that establish linkage between new development accommodated in the plan and the quantity of new facilities and/or services required to meet demands created by the new development;
- o the General Plan also contains specific reference to actual improvements that will require funding and financing, most notable the County's transportation system network; and
- o the General Plan provides an overall framework for programs which implement specific recommended policies, including a variety of programs involving funding services and financing.

This section of the Public Facilities/Services Element includes goals, policies, and implementation measures which address how needed facilities and services will be financed. The subject of financing capital improvements and public services within Contra Costa County is complex, given the large number of local jurisdictions involved. Municipal services are provided by 18 cities as well as a large number of special districts and county service areas which provide utilities, fire protection, parks and recreation, and other services.

At the present time, the Contra Costa County must fund a variety of countywide programs including social services and welfare, health services, and criminal justice. These functions dominate the County's budget. The County must also provide municipal services to urbanized unincorporated areas. As such, the County operates at a number of levels, providing its mandated countywide services, providing public services to the unincorporated areas, and also serving as a coordinating agency, linking the activities of state agencies, the cities, the County, and the regional special districts.

As additional urban growth occurs in unincorporated areas, demands for public services will continue to grow. The County does not have an adequate general revenue base to pay for typical public services standards in these areas, such as those being established by this General Plan. Demands for countywide social and welfare services, health services, and criminal justice have also grown substantially, due to demographic changes, growth, and cost inflation. To allow major areas of new development will require special financing mechanisms, e.g. the establishment of Mello Roos districts, etc.

At the same time as public and countywide service demands have been growing in the County, State and federal support for infrastructure improvements has diminished or disappeared entirely. Major grant programs for sewer and water improvements and highway construction have all but been eliminated. Additionally, State and federal funding for mandated human and social services programs have been cut back. Federal Revenue Sharing, once a major source of County funding for discretionary proposes, is gone. Article XIII A of the State Constitution (Proposition 13, passed by the voters in 1978), in addition to other more recent legislation, have further constrained the ability of County governments to raise public revenue.

Goals

- 7-A. To give a high priority to funding quality civic, public, and community facilities which serve a broad range of needs throughout the County.
- 7-B. To permit urban development in unincorporated areas only when financing mechanisms are in place or committed which assure that adopted service standards in the growth management program will be met.
- 7-C. To utilize equitable financing methods which assure that adopted service standards are achieved.
- 7-D. To cooperate with other local jurisdictions to promote the most cost effective methods of providing public facilities necessary for supporting the economic, social, and environmental well being of the county and its residents.
- 7-E. To resolve conflicts with other jurisdictions regarding the location of revenue generating land uses.

Policies

- 7-1. New development shall be required to pay its fair share of the cost of all existing public facilities it utilizes, based upon the demand for these facilities which can be attributed to new development.
- 7-2. New development, not existing residents, shall be require to pay all costs of upgrading existing public facilities or constructing new facilities which are exclusively needed to serve the new development.
- 7-3. Broad-based funding sources for public facilities shall be sought which benefit both existing, new, and future residents of the County.
- 7-4. The financial impacts of new development shall be determined during the project review process and specific findings shall be adopted as part of the project approval which relate to the demand for new public facilities and how the demand affects the service standards included in the growth management program.

- 7-5. The County shall take an active role in coordinating major infrastructure construction within the County, particularly the transportation system network and extension of sewer and water service, to assure consistency of these improvements with the General Plan. Conversely, the County shall actively oppose proposals by utilities and special districts found to be inconsistent with the County's General Plan.
- 7-6. When adopting, amending, and imposing impact fees and developer exactions, the County shall consider the effects of such fees and exactions upon project economics and the County's development goals.
- 7-7. The County shall develop and adopt a Capital Improvement Program which programs and prioritizes specific improvements to public facilities which are the responsibility of the County.
- 7-8. The County shall seek methods for cities to assume a greater share of the costs for countywide services including social and welfare services, health services, and criminal justice.
- 7-9. The County shall establish and implement an equitable and standardized approach to property tax sharing with cities during the annexation process.
- 7-10. The County shall cooperate with cities during the establishment of redevelopment projects to assure that fiscal impacts upon the County are minimized.
- 7-11. A comprehensive financing plan which assures that needed public facilities are adequately financed, shall be included in all new specific plans and area general plans adopted by the County.
- 7-12. The County shall cooperate with cities when processing applications for subdivisions or other large projects located within a city's Sphere of Influence.
- 7-13. The County shall stress financing strategies that maximize use of pay-as-you-go methods to gain the most benefit from available revenue.
- 7-14. The County shall recover all costs for services provided through use of fees and charges, whenever possible.
- 7-15. The County shall avoid using General Fund revenues for funding the incremental costs of new municipal services in developing areas.

Implementation Measures

Master Tax Sharing Agreement

- 7-a. Prepare and adopt a standard Master Tax Sharing Agreement for processing annexation applications. The agreement should be reviewed with cities to facilitate cooperation. Annexations and associated development activity subject to the agreement should be consistent with the County General Plan.

Redevelopment Fiscal Review

- 7-b. Establish a multi-departmental team to review new redevelopment projects. Establish standard fiscal criteria for evaluating such projects and establishing fiscal detriment, if any. If such detriment is determined, negotiate with redevelopment agency to mitigate this detriment.

Transportation Impact Fee

- 7-c. Review the Transportation Area of Benefit Fee Ordinance to assure consistency with AB 1600. Future ordinance amendments should assure that new development will fund a fair share of transportation improvements which are required to serve the new development.

Intergovernmental Coordination

- 7-d. Maintain an effective liaison and improve cooperation with the cities and special districts serving the County, as part of an effort to maintain high quality services and implement the General Plan.
- 7-e. As part of the annual review of the Capital Improvement Program, include a review under Government Code Section 65401, listing all capital projects sponsored by other jurisdictions during the following year. Additionally, the County should make a finding relative to the consistency of projects with the County's General Plan reviewed under Government Code, Section 65402.
- 7-f. Comment on any proposed capital improvements found inconsistent with the County's General Plan to the sponsoring agency.

Capital Improvement Program

- 7-g. Prepare and adopt a Capital Improvement Program that compiles the capital improvements planned for construction over the next five year period by County agencies, including cost estimates, the phasing of specific improvements and associated costs, and methods with which specific improvements will be financed.

Development Review/Plan Preparation Process

- 7-h. Amend the development review and plan preparation process to require all major projects to consider fiscal impacts, including analysis of how the proposed project will effect the County's fiscal balance, its impact upon public facilities, and methods proposed for financing any needed public facilities. Where negative fiscal impacts are indicated, include specific mitigation measures as conditions of project approval or carefully consider the appropriateness of approving, and do not approve any project unless such mitigation measures are guaranteed and fully implemented by the project proponent.

Water Service

Introduction

Water service in Contra Costa County is provided by either special service districts or by nine municipalities. There are two major water providers in the County, East Bay Municipal Utility District (EBMUD) and the Contra Costa Water District (CCWD). EBMUD delivers water directly to its customers after it is treated. CCWD provides treated water services to several cities in the Central County area and several city and other water agencies buy "raw," untreated water from CCWD, treat it, and then sell it to their own local customers. CCWD is not limited to providing domestic urban water supplies. Other services include wholesale treated water, reclaimed water, industrial, agricultural and landscaping irrigation water supplies.

East Bay Municipal Utility District provides treated water to all of western Contra Costa County, the Lamorinda area, portions of Walnut Creek and Pleasant Hill, and all of the San Ramon Valley (see Figure VII-1). The utility is the largest water district in Northern California and serves 1.1 million customers in Alameda and Contra Costa County. The District brings water from the Mokelumne River watershed in the Sierra Nevada through three 81 mile aqueducts to the East Bay.

A Comprehensive Water Supply Management Program has been proposed by EBMUD staff to provide solutions to EBMUD's water supply problems: security of the water supply against the risk of an extended outage of the Mokelumne Aqueduct pipelines due to a natural disaster in the Delta; water supply shortages in dry years and drought periods; and safety and health issues related to maintaining high quality water. The proposed program considers the needs of existing and future customers within the District's ultimate service boundary to the year 2020. It does not consider extension of water service outside the ultimate boundary.

The other major water supplier, Contra Costa Water District, supplies treated water to all urbanized areas in Central Contra Costa County that are not serviced by EBMUD: the northern and eastern portion of Walnut Creek, most of Pleasant Hill, all of Concord and Clayton, the Hidden Lakes area of Martinez, and the unincorporated areas of Vine Hill, Pacheco, Clyde, Port Chicago, and along Marsh Creek Road to Morgan Territory (see Figure VII-1).

The CCWD treated water system consists of a San Joaquin Delta intake at Rock Slough, a river intake and pumping station at Mallard Slough near West Pittsburg, Mallard Reservoir north of Concord where raw Delta water is stored, and a modern water treatment plant near Mallard Reservoir. The CCWD wholesales raw water to industry and several municipal water companies, including the Cities of Antioch, Pittsburg, and Martinez. Other agencies which buy untreated water from CCWD are the Southern California Water Company (serving West Pittsburg) and the Oakley Water District.

The CCWD takes out raw Delta water at Rock Slough east of Knightsen and transports it to customers in East and Central County via the 48 mile long Contra Costa Canal system. The CCWD receives most of its supply from two takeouts on the Canal, although during the winter months of wet years it also uses Mallard Slough to augment its supply.

FIG. V - 4 SCENIC ROUTES PLAN

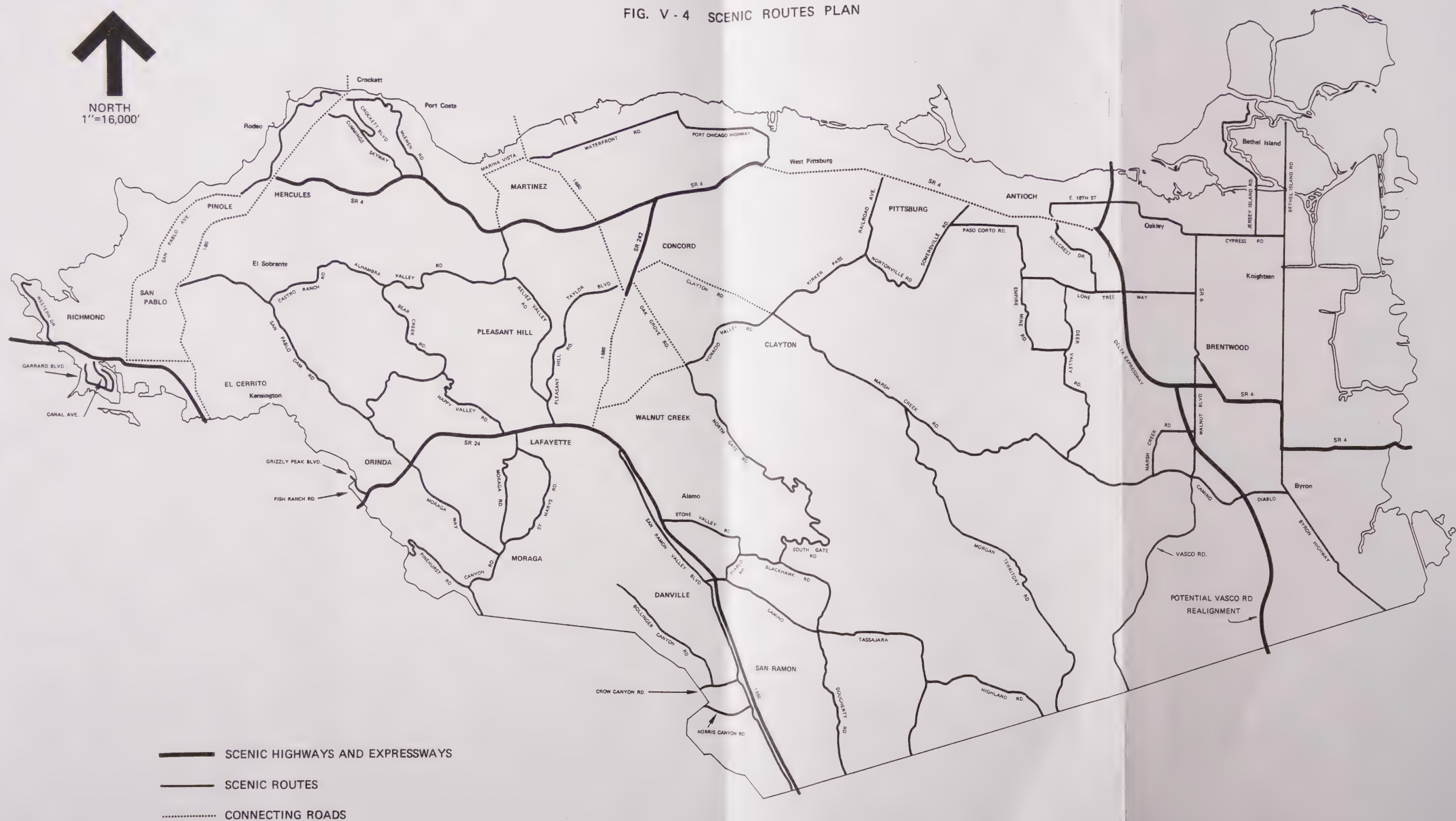
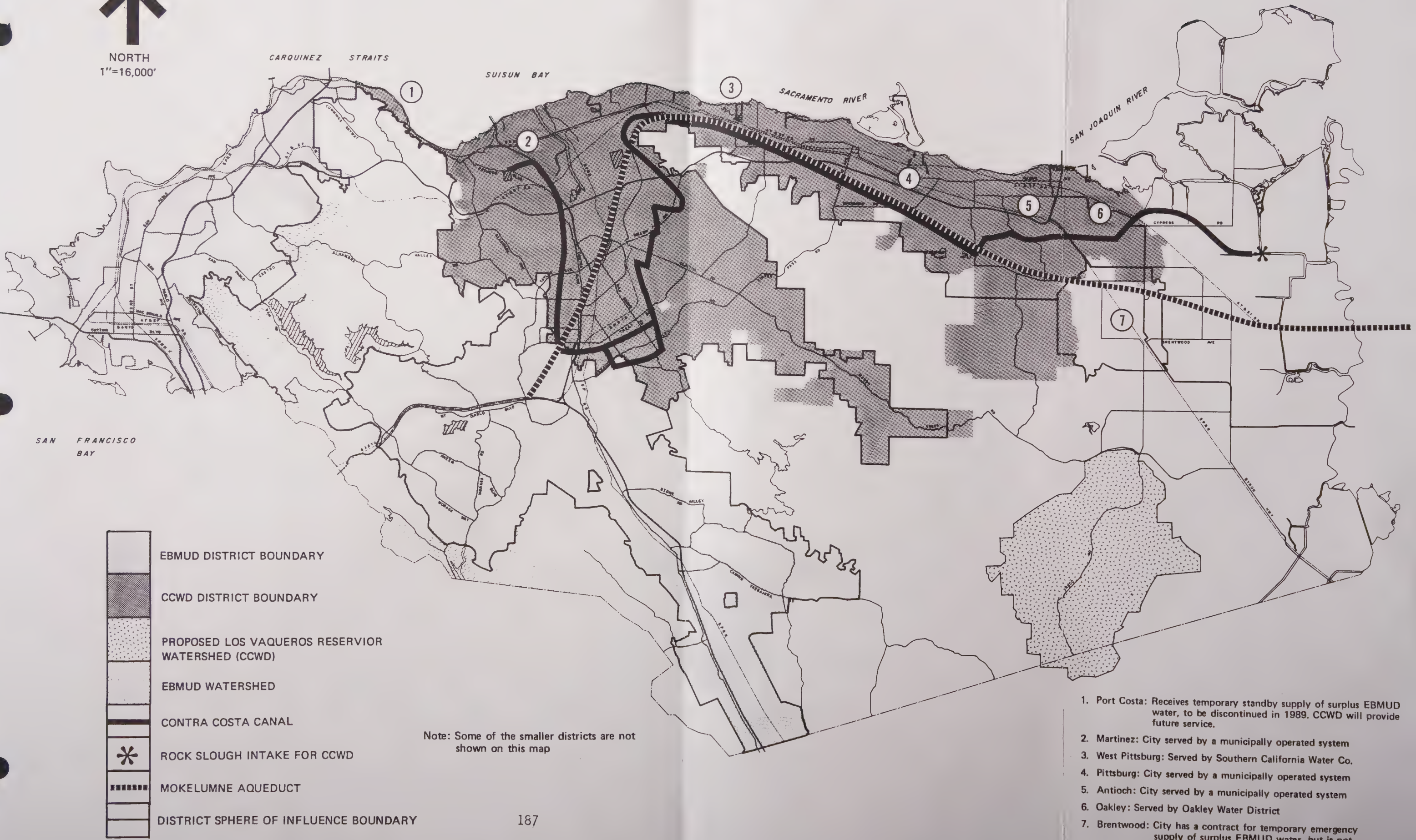


FIG. VII - 1 WATER SERVICE DISTRICTS



NORTH
1"=16,000'



EBMUD DISTRICT BOUNDARY

CCWD DISTRICT BOUNDARY

PROPOSED LOS VAQUEROS RESERVIOR
WATERSHED (CCWD)

EBMUD WATERSHED

CONTRA COSTA CANAL

ROCK SLOUGH INTAKE FOR CCWD

MOKELUMNE AQUEDUCT

DISTRICT SPHERE OF INFLUENCE BOUNDARY

Note: Some of the smaller districts are not
shown on this map

1. Port Costa: Receives temporary standby supply of surplus EBMUD water, to be discontinued in 1989. CCWD will provide future service.
2. Martinez: City served by a municipally operated system
3. West Pittsburg: Served by Southern California Water Co.
4. Pittsburg: City served by a municipally operated system
5. Antioch: City served by a municipally operated system
6. Oakley: Served by Oakley Water District
7. Brentwood: City has a contract for temporary emergency supply of surplus EBMUD water, but is not taking delivery during the drought shortage.

A major problem facing the Contra Costa Water District is the increasing salinity of its water supply. Because the utility takes water from the San Joaquin-Sacramento River Delta, the quality of the water varies drastically according to the seasonal volumes of freshwater flows through the area. During years of lower than average rain and snowfall, the intrusion of saltwater reaches further inland, threatening the intake at Rock Slough. This condition is further exacerbated by the historic practices of diverting more and more water out of the two inland rivers for agricultural purposes before they reach the Delta. This problem will also be significantly ameliorated by construction of the Los Vaqueros Reservoir, which will be used to blend higher quality water with the salty summer flows.

The only large reservoir which the CCWD uses to store water for emergency backup is Contra Loma, in the hills south of Antioch. The lack of local storage reservoirs is a major weakness of the District's facilities, which is intended to be rectified by construction of the planned Los Vaqueros Reservoir(s) in the southeastern portion of the county.

The third source of water in Contra Costa County is groundwater supplies. Several small public and private water companies extract underground water through wells and convey it to nearby customers. Most of these are in East County areas such as Bethel Island, Knightsen, Byron, and Discovery Bay.

Periodic droughts experienced by the region have underlined the importance of water conservation efforts. Contra Costa is the only county in the region to have adopted specific water conservation regulations which apply to all new development in unincorporated areas. This measure requires new development to limit lawn areas and to install drought resistant landscaping, among other conditions of approval for development projects. Brentwood is currently utilizing wells and has an emergency "interruptible" supply of water from EBMUD during non-drought years. The city is currently looking at other permanent sources of fresh water.

Further discussion of the service boundaries and plans for each of the water service agencies in Contra Costa County is included in the "Map" section below.

Goals

- 7-F. To assure potable water availability in quantities sufficient to serve existing and future residents.
- 7-G. To encourage the development of local water supplies to meet the growth needs of the County.
- 7-H. To encourage the conservation of water resources available to the County and to the State.
- 7-I. To protect and enhance the quality of the water supplied to County residents.
- 7-J. To ensure that new development pays the costs related to the need for increased water system capacity.

Policies

- 7-16. Water service systems shall be required to meet regulatory standards for water delivery, water storage and emergency water supplies.
- 7-17. Water service agencies shall be encouraged to establish service boundaries and to develop supplies and facilities to meet future water needs based on the growth policies contained in the County and cities' General Plans.
- 7-18. Water service agencies shall be discouraged from constructing new water distribution infrastructure which exceeds future water needs based on the buildout of the County General Plan and city general plans.
- 7-19. Urban development shall be encouraged within the existing water Spheres of Influence adopted by the Local Agency Formation Commission; expansion into new areas beyond the Spheres should be restricted to those areas where urban development can meet all service standards included in this General Plan.
- 7-20. The development of new water districts, private systems, or public water companies shall be discouraged.
- 7-21. Development of rural residences, or other uses, that will be served by well water or an underground water supply, shall be discouraged in areas with high nitrate concentrations in the groundwater (see Figure VII-2).
- 7-22. Prior to approval of development entitlements, new development shall be required to obtain ~~the commitment of a water supply~~ verification from a water service agency ~~sufficient~~ that an adequate water supply can be provided to serve the development if the development is built within a period of time specified by the water agency. That supply shall not depend upon surplus water supplies as a primary source.
- 7-23. Water service agencies shall be encouraged to meet all regulatory standards for water quality prior to approval of any new connections to that agency.
- 7-24. The County shall cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.
- 7-25. Opportunities shall be identified and developed in cooperation with water service agencies for use of non-potable water, including ground water, reclaimed water, and untreated surface water, for other than domestic use.
- 7-26. Land uses and activities that could result in contamination of groundwater supplies shall be identified, monitored and regulated to minimize the risk of such contamination.

7-27. The need for water system improvements shall be reduced by encouraging new development to incorporate water conservation measures to reduce peak water use.

7-28. The reclamation of water shall be encouraged as a supplement to existing water supplies.

Map of Planned Water Service Areas

The existing and planned service boundaries for the nine water service agencies in Contra Costa County are shown in the previous Figure VII-1. State law requires the Local Agency Formation Commission (LAFCO) of each county to adopt "Sphere of Influence" boundaries which show the ultimate area that is expected to be served by each water agency. The existing service is then expanded as necessary to include projected growth areas within the adopted Sphere boundary.

There are only a few areas in the County which are planned for development but are not currently included within an existing water service or Sphere of Influence boundary. These areas should ultimately be annexed into an appropriate service district. Conversely, Figure VII-1 highlights those areas which are included within a current water service boundaries or Sphere areas, but which are not planned for urban development under the provisions of this General Plan.

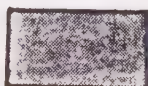
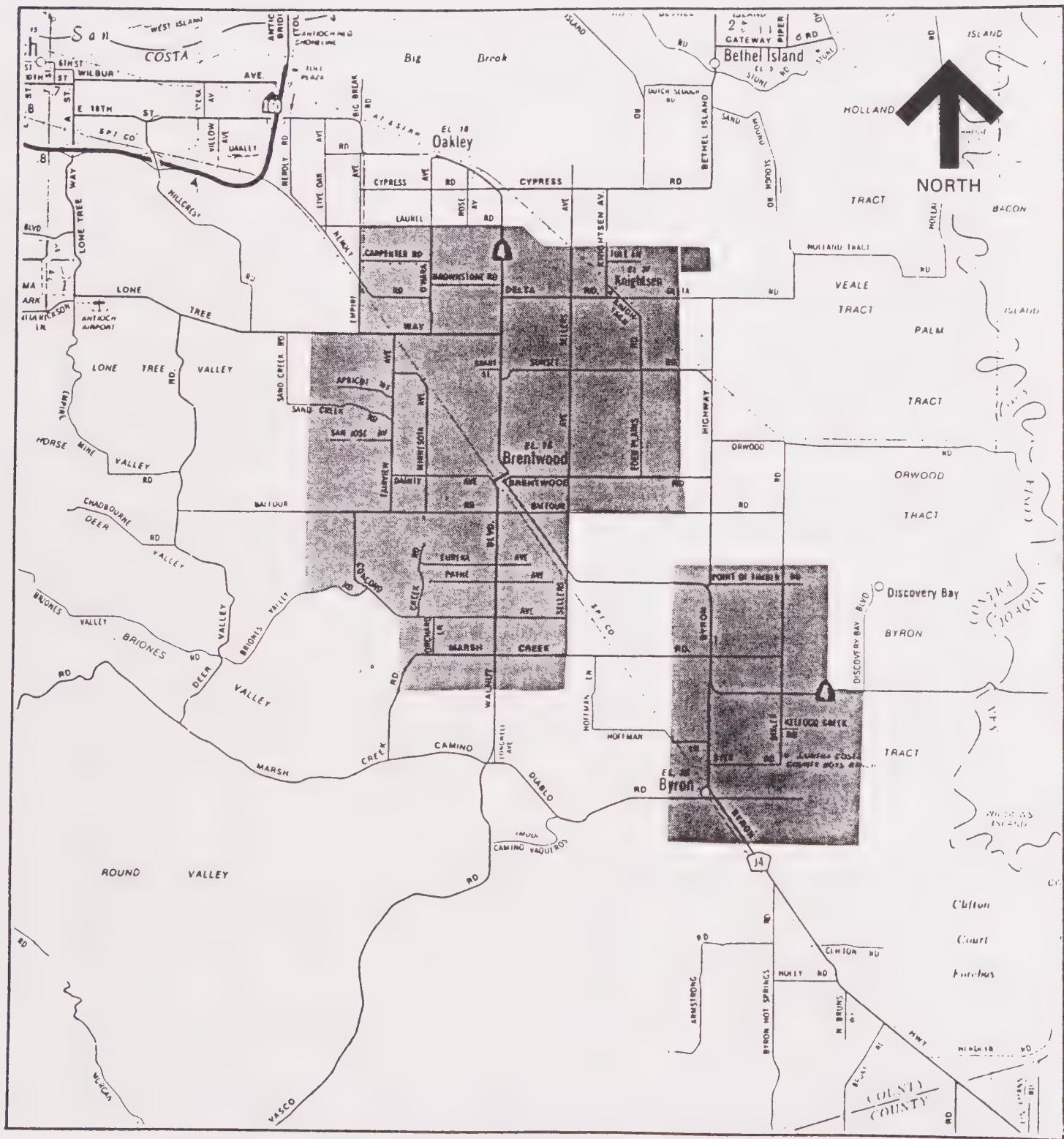
These latter areas include watershed and open space properties owned by the water districts or by the regional park district, and lands designated by this plan to remain in agricultural and open space uses. Although district watershed lands are not planned to receive urban water service, due to tax reasons these lands will remain within the service district boundaries. However, the other areas not planned for urban development should generally be detached from the service districts if they are not providing service.

The most serious potential water service deficiencies that have been identified in Contra Costa County are found in rural East County. A significant amount of residential and commercial growth in the City of Brentwood and the unincorporated community of Oakley is allowed under the provisions of this General Plan.

The three key issues regarding future water service to the rural East County area involve: (1) the logistics of supplying water to the growth areas (constructing new pipelines, etc.); (2) identifying which water service agencies will assume responsibility for providing service; and (3) guaranteeing that an adequate supply of water will exist during normal and drought periods. The issue of which water district will commit to serving future populations is critical for the rapidly growing East County area.

The third source of water in the county, wells, has served as the primary water source in some rural parts of the county. The feasibility of continuing or expanding these areas served by wells is dependent on the quality and quantity of the groundwater supplies. An important measure of groundwater quality is the concentration of nitrates in the supply. A high concentration of nitrates can contribute to methemoglobinemia, a condition affecting infants.

FIG. VII - 2 AREAS OF IDENTIFIED HIGH NITRATE CONCENTRATION



AREAS OF HIGH NITRATE CONCENTRATION

Figure VII-2 highlights those areas in the county which have been identified by the County Health Department as containing groundwater nitrate concentrations that are higher than acceptable levels. Groundwater supplies in these identified areas are to be considered unsuitable as a future water source for rural residences.

Thus, further subdivision and construction of rural housing units ("ranchettes") will not be allowed under this General Plan, unless the subdivision and home construction conform to the criteria for the "Rural Residential Development Policy" included in the "Agricultural Resources" section of the Open Space/Conservation Element. This policy requires that ranchette proposals meet applicable water quality standards as regulated by the County Health Services Department.

Implementation Measures

Development Review Process

- 7-i. Approve no subdivision maps and other development permits without a specific finding adopted by the hearing body that an adequate water supply for the project has been verified. Such a legal finding shall be based upon a verification by the appropriate service provider or regulatory agency that capacity of potable water ~~exists~~ within the system to serve the specific development project exists or will be provided by a funded program or project condition of approval.
- 7-j. Identify, map, and monitor those areas where high levels of nitrates have been detected in groundwater supplies.
- 7-k. Discourage subdivisions or other permits which would allow the construction of rural residential units served by well water in areas of high nitrate concentrations, consistent with existing Health Department policy.
- 7-l. Discourage subdivisions or other permits which would allow the construction of rural residential units served by well water on lots of less than one acre, consistent with existing Health Department policy.

Intergovernmental Coordination

- 7-m. Encourage water service agencies and the Local Agency Formation Commission (LAFCO) to annex lands planned for urban development by this General Plan into their service areas. Conversely, encourage water agencies and LAFCO to detach private lands from the service boundaries which are not planned for urban development and which are not currently served.

- 7-n. Encourage LAFCO to establish water service Spheres of Influence that are coincident with the boundary of planned urban development in this General Plan, including those rural properties that currently receive service.
- 7-o. Encourage the implementation of existing Urban Water Management Plans.
- 7-p. Encourage water service agencies to require separate service connections and meters where large quantities of water are used for special purposes such as landscape irrigation.
- 7-q. Encourage water agencies to provide potable water containing not more than 50 ppm sodium and 65 ppm chloride.

Water Conservation Program

- 7-r. Include water conservation measures recommended by water service agencies in the conditions of approval for subdivisions and other new development.
- 7-s. Conduct regular inspections of public water systems under the jurisdiction of the County for leak detection, water audits, and repair and installation of individual meters.

Sewer Service

Introduction

Sewer service in Contra Costa County is the responsibility of thirteen municipalities and service districts. The largest sewage treatment agencies are Central Contra Costa Sanitary District (CCCCSD, which serves most of the central portion of the County); Delta Diablo (which serves the Pittsburg-Antioch area); West Contra Costa Sanitary District (which serves a portion of Richmond, El Sobrante, and San Pablo); and the East Bay Municipal Utility District (EBMUD), which serves Kensington, El Cerrito, and a portion of Richmond.

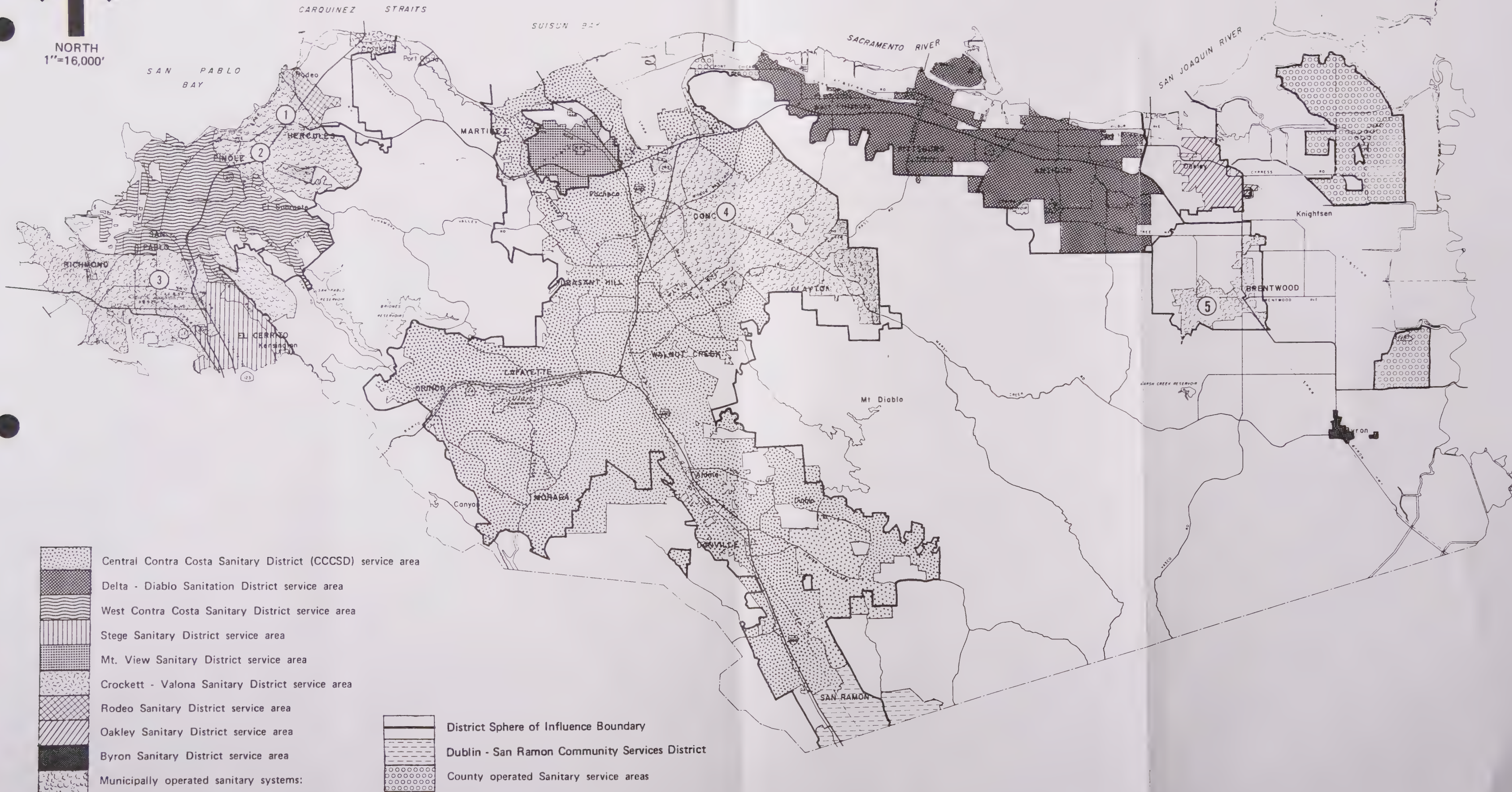
Sewer service consists of the transmission of municipal and industrial wastewater to a treatment facility, treatment, and then disposal of the wastewater and residual waste solids. As with water service, several cities operate their own local sewage collection system and contract with the larger agencies to treat the effluent. Other cities operate their own collection systems as well as treatment plants.

Central Contra Costa Sanitary District provides wastewater (sewerage) collection and treatment services to all the cities and unincorporated areas of Central County, excluding the eastern side of the City of Martinez and the southernmost portion of the City of San Ramon (see Figure VII-3). In the cities of Concord and Clayton, municipal sewerage systems are responsible for wastewater collection and Central Sanitary treats the effluent. The District's wastewater treatment plant is located at the intersection of Route 4 and I-680. The treated wastewater is piped north and discharged into Suisun Bay.

FIG. VII - 3 SEWER SERVICE DISTRICTS



NORTH
1"=16,000'



CARQUINEZ STRAITS

SUISUN BAY

SACRAMENTO RIVER

SAN JOAQUIN RIVER

SAN FRANCISCO
BAY

Mt Diablo

- 1 SAN PABLO
- 2 RODEO CREEK
- 3 EL TOYONAL (ORINDA)
- 4 CANYON
- 5 MUIR OAKS (MARTINEZ)
- 6 BETHEL ISLAND

RESERVIOR DRAINAGE AREAS (LAFAYETTE, SAN PABLO AND BRIONES)

201

The wastewater treatment plant operated by CCCSD previously had a capacity to treat approximately 35 million gallons per day (mgd) of sewage, which accommodated roughly 350,000 people. The plant has recently undergone a hydraulic expansion which increased capacity to 45 mgd, equal to serving future population growth of approximately 100,000 people over current levels.

The Delta Diablo Sanitation District (also known as County Sanitation District No. 7-A) operates a sewage treatment plant that treats wastewater from unincorporated West Pittsburg (Zone 1 of the district), the City of Pittsburg (Zone 2), and the City of Antioch (Zone 3). The treatment plant has a capacity to treat 12.6 million gallons per day. The treated effluent is discharged into New York Slough and the Sacramento-San Joaquin System. Delta Diablo has responsibility for the interceptor (main) pipelines and collector system in West Pittsburg, but in the other two cities the sanitation district operates only the interceptor lines.

Delta Diablo Sanitation District also provides contract maintenance and operation of County Sanitation District 19, which is the sewage and water districts system for the Discovery Bay community. Expansion of the water and sewage treatment system in Discovery Bay has been phased in conjunction with the buildout of the planned community. The treated effluent is discharged into a reclamation drain, and then into the Old River in the Delta.

The Oakley-Bethel Island Wastewater Management Authority is a Joint Powers Agency between Contra Costa County Sanitation District No. 15 (Bethel Island) and the Oakley Sanitary District (see Figure VII-3). The County and the Oakley utility operate two separate collection facilities, but they jointly operate a newly constructed wastewater treatment plant northeast of downtown Oakley. The treatment plant processes approximately 1 million gallons per day during average dry weather flow and has a treated wastewater disposal capacity of approximately 1.2 million mgd. There are indications from early operating data that the treatment plant may actually be able to achieve a treatment capacity of 2 mgd, although this capacity may be constrained by the land method used for disposal.

Bethel Island wastewater flows are relatively high in relation to the level of development which must be served, according to a recent report, because of a very high rate of inflow and infiltration of non-wastewaters into the Bethel Island sewage system. Consequently, during wet weather Bethel Island is expected to take up a large portion of the wastewater treatment capacity of the district. This situation could cause major problems sometime in the near future, when planned residential and commercial development in the Oakley area occurs.

The Oakley-Bethel Island plant has been granted a permit by the California Regional Water Quality Control Board to discharge treated effluent by irrigating nearby agricultural lands or leaching peat fields owned by the Authority and a local dairy. The most serious constraint to future development within the Oakley-Bethel Island sewerage district is not the lack of treatment capacity at the plant, but the lack of adequate land to use for disposal of treated wastewaters.

In West County, the City of San Pablo, parts of Richmond and Pinole, El Sobrante and other unincorporated areas in the vicinity, are served by the West Contra Costa Sanitary District (see Figure VII-3). The West Contra Costa District operates a sewage treatment plant which has a design capacity to process 12 million gallons per day, although average dry weather flows are currently one half of that capacity (6 mgd). The District covers some of the areas in western Contra Costa County that have a high potential for future development (or redevelopment), including the entire North Richmond unincorporated area, and the lands along Castro Ranch Road in El Sobrante.

A municipally owned sewerage collection and treatment system serves approximately 50,000 customers in the City of Richmond, independent of the West Contra Costa Sanitary District. In addition, there are two autonomous sewer districts which serve the Rodeo and Crockett areas.

The Stege Sanitary District encompasses the Richmond Annex, the City of El Cerrito, and the unincorporated community of Kensington. This area was annexed into the East Bay Municipal Utility District during the 1950's. EBMUD treats effluent from the Stege Sanitary District under contract, while Stege is responsible for maintenance of the sewer lines.

The Dublin-San Ramon Services District (DSRSD) is a multi-purpose district which provides sewerage to approximately one-half of the City of San Ramon, generally the area south of Montevideo Drive. DSRSD is a member of the Livermore-Amador Valley Water Management Agency (LAVWMA), which operates a regional pipeline that transports treated effluent out the valley to an outfall in San Francisco Bay.

Each LAVWMA member is allocated a certain portion of the total discharge capacity, as limited by the size of the pipeline that exports waste out the area. The DSRSD allocation is almost exhausted. A major effort to determine how to increase export capacity is currently underway.

There are three municipal sewer systems in the County which serve growth areas: Pinole, Hercules and Brentwood. The City of Pinole operates a sewage treatment plant which treats effluent from both the Pinole and Hercules municipal collection systems.

The City of Brentwood operates a small sewage treatment plant with a capacity of approximately 0.9 mgd. The plant is processing 0.5 mgd. and approved development projects account for another 0.3 mgd. Consequently, without further expansion of sewage plant capacity, no significant new projects can be assured for sewer hook-ups. The City hopes to have the new plant expanded by 1989. Phase I expansion will allow 3,000 dwelling units and increase capacity to 1.8 mgd. A second phase is proposed to allow further capacity to 2.7 mgd. This second expansion is currently in the design phase.

An important issue for Brentwood to resolve is the method of wastewater treatment. Like Bethel Island-Oakley, the city currently relies on land disposal (irrigating agricultural lands). However, as the city's required treatment capacity increases due to urban development, the land disposal option will become more costly.

Goals

- 7-K. To provide sewer collection, treatment and disposal facilities adequate to meet the current and projected needs of existing and future residents.
- 7-L. To provide wastewater treatment that preserves, and to the extent feasible, enhances water quality and the natural environment.
- 7-M. To develop wastewater reclamation as a supplement to imported surface water supplies.
- 7-N. To assure that new development pays the costs related to the need for increased sewer system capacity.

Policies

- 7-29. Sewer treatment facilities shall be required to operate in compliance with waste discharge requirements established by the California Regional Water Quality Control Board. Development that results in the violation of waste discharge requirements shall not be approved.
- 7-30. Sewer service agencies shall be encouraged to establish service boundaries and develop treatment facilities to meet future service needs based on the growth policies contained in the County and cities' General Plans.
- 7-31. Urban development shall be encouraged within the sewer Spheres of Influence adopted by the Local Agency Formation Commission; expansion into new areas beyond the Spheres should be restricted to those areas where urban development can meet all service standards included in this General Plan.
- 7-32. The development of new sewer treatment districts or private "package plant" sewer systems shall be prohibited.
- 7-33. Development of rural residences, or other uses, that will be served by septic tank and leachfields, shall be discouraged in areas with high groundwater levels or soils with poor percolation characteristics.
- 7-34. Prior to approval of development entitlements, new development shall be required to obtain verification from a sewer service agency that adequate treatment capacity can be provided to serve the development if the development is built within a period of time specified by the sewer agency.
- 7-35. Appropriate land areas in the County shall be designated for future sewer facilities that may be required and which are consistent with other policies in the General Plan.

- 7-36. Opportunities for using reclaimed wastewater shall be identified and developed in cooperation with sewer service and water service agencies.
- 7-37. Beneficial uses of treated wastewater including marsh enhancement and agricultural irrigation shall be encouraged. Such wastewater reclamation concepts shall be incorporated into resource management programs and land use planning.
- 7-38. The need for sewer system improvements shall be reduced by requiring new development to incorporate water conservation measures which reduce flows into the sanitary sewer system.

Map of Planned Sewer Facilities

The existing and planned service boundaries for the thirteen sewer service agencies in Contra Costa County are shown in the previous Figure VII-3. Like water districts, sewer districts are required by State law to have adopted "Sphere of Influence" boundaries which show the ultimate area that is expected to be served by the agency. The existing service is then expanded as necessary to include projected growth areas within the adopted Sphere boundary.

There are few areas in the county which are not currently included within an existing sewer service or Sphere of Influence boundary, but which are planned for development and will require service. As in the case of water service districts, however, there are areas which are included within the current sewer service boundaries or Sphere areas, but which are not planned for urban development under the provisions of this General Plan. These latter areas include open space properties owned by the regional park district, and lands designated by this plan to remain in agricultural uses. These areas should ultimately be detached from the sewer service districts.

Sewer service to West and Central County and the Pittsburg-Antioch area has been planned to adequately meet projected demand resulting from existing and future development. However, several issues have been identified which may influence sewer service to some growth areas in the East County area.

Projected growth in East County communities (Oakley, Brentwood, Bethel Island) is far in excess of the existing wastewater treatment/disposal capacity. The current method of wastewater disposal in these areas is either land disposal (land application of treated wastewater onto open space or agricultural lands), or discharge into the San Joaquin-Sacramento Delta. Expanding this land disposal technique may be impractical in the future due to the large amount of land that would be required for the disposal of wastewater generated by projected growth. However, this option may be more feasible if a higher level of wastewater treatment was able to generate wastewater suitable for irrigation of a wider range of agricultural crops.

An alternative to accommodate larger wastewater flows is to receive permission from the Central Valley Regional Water Quality Control Board (RWQCB) to discharge effluent into Big Break waters during the wet months. The latter option may be difficult, since the Regional Water Quality Control Board has discouraged the issuance of any new permits which would allow discharge into Delta or river waters. The protection of Delta and Bay water quality is also a County concern. Disposal options should be thoroughly evaluated to identify the most cost effective and least environmentally damaging alternative means of disposal.

In addition to the discharge of treated effluent into rivers or onto agricultural land, a third form of sewage treatment, septic tanks and leachfields, is used in rural areas where no public service is available. The use of leachfields and septic tanks is not practicable, however, in some of the rural areas of Contra Costa County where high groundwater conditions, high nitrate concentrations in groundwater, or soils with poor percolation (absorption) characteristics are present.

In selected areas, the County Health Officer has established a moratorium on the issuance of permits for any additional septic tank systems. The locations of the existing septic tank moratorium areas are illustrated on Figure VII-4. The approval of minor subdivisions for rural residential or ranchette development in these areas is generally not allowed. Other areas may be placed in moratorium areas if conditions warrant that action. The County has also adopted measures to ensure that subdivision of lands and placement of septic tanks and leachfields is regulated within the watershed of Contra Costa's major reservoirs.

Implementation Measures

Development Review Process

- 7-t. Approve no subdivision maps and other development permits without a specific finding adopted by the hearing body that ~~an~~ adequate wastewater treatment capacity for the project has been verified. Such a legal finding shall be based upon a verification by the appropriate service provider or regulatory agency that capacity ~~exists~~ within the system to serve the specific development project exists, or will be provided by a funded program or project condition of approval.
- 7-u. Identify, map, and monitor those areas where high groundwater levels and soils with poor percolation characteristics have been detected.
- 7-v. Discourage approval of subdivisions or other permits which would allow the construction of rural residential units served by septic tanks and leachfields in areas of high groundwater levels or poor percolation characteristics, consistent with existing Health Department policy.
- 7-w. Continue to enforce sections 420-6.002 and 4200-6.008 of the County Code, which regulates the placement of septic tanks within the watersheds of reservoirs.

- 7-x. Include wastewater reduction and other measures recommended by sewer service agencies in the conditions of approval for subdivisions and other new development.

Intergovernmental Coordination

- 7-y. Encourage sewer service agencies and the Local Agency Formation Commission to annex lands planned for urban development by this General Plan into their service areas. Conversely, encourage sewer agencies and LAFCO to detach lands from their service boundaries which are not planned for urban development and not currently served.
- 7-z. Encourage LAFCO to establish sewer service Spheres of Influence that are coincident with the boundary of planned urban development in this General Plan, including those rural areas that currently receive service.

Drainage and Flood Control

Introduction

The implementation of drainage facilities in the county falls under the jurisdiction of either the eighteen cities, the County for the unincorporated areas, or the County Flood Control and Water Conservation District, which has adopted plans which serve both cities and the County. All three groups generally use the same design criteria in sizing and evaluating drainage systems. The basic unit for storm drainage planning is a watershed. Watershed boundaries do not coincide with political boundaries, but are determined by topography, or the "lay of the land".

Unlike domestic water and sanitary systems, the drainage of storm water is a natural occurrence, i.e., water flows downhill. Consequently, much of the drainage system serving the County consists of the natural drainage swales, ditches and watercourses. During the urbanization process, most of the swales and ditches are replaced by developers with underground storm drains or concrete lined ditches. To a lesser extent, natural watercourses such as creeks may also be modified during the development process. Modifications of a creek normally occur only to correct erosion, when the natural watercourse is determined to be inadequate for flood control, or it interferes with the proposed development plan.

Regional drainage plans have been developed by the cities and the County Flood Control and Water Conservation District in many areas to guide developers in the implementation of new drainage systems needed to serve development and to provide the basis for local and federal flood control projects. Local drainage infrastructure is provided by developers as part of the land development process.

It should be noted that numerous other goals and policies regarding the preservation of creeks and other watercourses in the County are included in the "Urban and Rural Creeks" section of the Open Space/Conservation Element. Those policies should be read in concert with those listed below to get a complete understanding of how flood control and open space issues are to be resolved.

Goals

- 7-O. To protect and enhance the natural resources associated with creeks and the Delta, and their riparian zones, without jeopardizing the public health, safety, and welfare.
- 7-P. To protect creeks and riparian zones identified as valuable from damage caused by nearby development activity.
- 7-Q. To employ alternative drainage system improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible.
- 7-R. To enhance opportunities for public accessibility and recreational use of creeks, streams, drainage channels and other drainage system improvements.
- 7-S. To encourage private programs which assure ongoing maintenance of natural watercourses utilizing methods which retain the characteristics of natural watercourses.
- 7-T. To ensure that new development pays its fair share of the costs related to increased runoff created by the development.
- 7-U. To support the concept that existing development pays the cost of building and maintaining drainage improvements required to serve existing developed areas.

Policies

- 7-39. Watershed management plans shall be developed which encourage the development of detention basins and erosion control structures in watershed areas to reduce peak stormwater flows, as well as to provide wildlife habitat enhancement.
- 7-40. Land use plans and zoning shall be the primary means for floodplain management in preference to structural improvements, where possible.
- 7-41. Alternative drainage system improvements such as floodplains, leveed floodways, bypass channels and culverts, and detention basins, shall be incorporated into new flood control plans and existing plans as they are revised.

- 7-42. Aesthetic, environmental, and recreational benefits shall be taken into full consideration when determining the costs and benefits of alternative drainage system improvements.
- 7-43. Design guidelines shall be prepared which address aesthetic and engineering characteristics and criteria for alternative drainage system improvements.
- 7-44. Public participation shall be encouraged in the design of major flood control projects.
- 7-45. New development shall be required to finance the full costs of drainage improvements necessary to accommodate projected peak flows due to the project. Reimbursement from subsequent developments which benefit from the added capacity ~~shall~~ may be provided.
- 7-46. On-site water control shall be required of major new developments so that no increase in peak flows occurs compared to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts or the project is implementing an adopted drainage plan.
- 7-47. Regional detention basins shall be favored over smaller, on-site detention basins.
- 7-48. If it is not possible to provide a channel cross section sufficient to carry the 100 year flow, detention basins should be developed.
- 7-49. Open bypass channels, detention basins and all drainage facility rights of way which are provided at different locations in order to supplement existing natural creeks should be developed as an asset to the development, e.g. as a secondary recreation use.
- 7-50. Natural streams and channels which have been structurally modified shall be evaluated for potential use as urban open spaces, linear parks, and trails. Cities and other agencies responsible for recreation shall be encouraged to undertake this evaluation.
- 7-51. Public access to watercourses shall be required of major new developments when liability, security, and maintenance issues can be satisfactorily resolved.
- 7-52. Detention basins shall be designed for multiple uses such as parks and playing fields when not used for holding water, if liability and maintenance issues can be satisfactorily resolved.
- 7-53. Plans for Delta levee rehabilitation and maintenance should be developed to protect the beneficial uses of the Delta.
- 7-54. Plans for Delta levee rehabilitation and maintenance should consider methods to foster riparian habitat to the fullest extent possible consistent with levee integrity.

- 7-55. Agencies whose projects benefit from Delta levee protection, including State and Federal government (water, highway, fish and wildlife, and recreational projects), PG&E, and private railroad companies, shall participate in funding all Delta levee improvements and maintenance.

Map of Planned Drainage and Flood Control Facilities

Numerous existing or potential storm drainage problems have been identified in the County. There are three types of flood control projects that should be constructed in order to mitigate drainage problems. The three types of projects are: (1) local and regional facilities needed to solve existing flooding problems; (2) local and regional facilities needed to accommodate the runoff anticipated from future urban development; and (3) improvements to the levee system in the San Joaquin-Sacramento Delta. All three kinds of projects are discussed below.

There are a large number of unfunded projects needed to correct existing flood control problems. The total cost of the projects necessary to correct the problems is estimated to range from \$500 to \$800 million. (Included in this estimated cost is \$53 million for levee rehabilitation projects, which are discussed separately below.) The individual flood control projects and their estimated cost are itemized in the Technical Appendix to this plan.

Many of the existing flood control problems are in the Central and West County areas. Because many of the affected areas are already developed, assistance from future development in the form of drainage fees cannot be expected to completely mitigate existing and future problems. The Federal and State governments have provided some funding for projects such as these, but there is still a large shortfall.

The construction of specific local collector drainage systems and regional drainage facilities will be required to accommodate future development and mitigate the resultant increase in peak runoff from urbanization. However, present procedures for requiring all new development to pay its fair share of needed drainage infrastructure are cumbersome and inconsistently applied.

Many, but not all, major development projects are required to mitigate the increase in storm water runoff due to the projects, but most smaller developments contribute nothing to the regional mitigation solution. Many of the smaller developments are located in existing urbanized areas and are too small to bear the full cost of the needed drainage improvements. Frequently, these developments are allowed to proceed without contributing to the long-range solutions. Another problem is an inconsistency in the amounts of drainage improvement fees required by the various cities and the County.

Preparing regulations for the formation of drainage area plans and the adoption of fees is a time consuming process. The process is complicated by the lengthy period of study which is needed to evaluate various alternatives to find a solution that is functional, economically feasible, and environmentally and socially acceptable.

Following the adoption of a drainage plan, drainage fees can be assessed against new development within the drainage area. Because drainage fees can only be assessed on new developments occurring within adopted drainage areas, developments built within areas not yet established as adopted drainage areas do not pay standardized drainage fees, but must meet the collect and convey requirements of the subdivision ordinance. Furthermore, they must comply with drainage requirements imposed as conditions of approval of the development.

Figure VII-5 is a map of the county that outlines the numerous flood control drainage areas and a "generalized urban use boundary," i.e., the perimeter of planned urban development allowed under this General Plan. The drainage areas have been categorized according to the status of adopted drainage plans and fees required for new development in each area, as described below:

- o flood control drainage areas with established fees and/or payment for drainage mitigation.

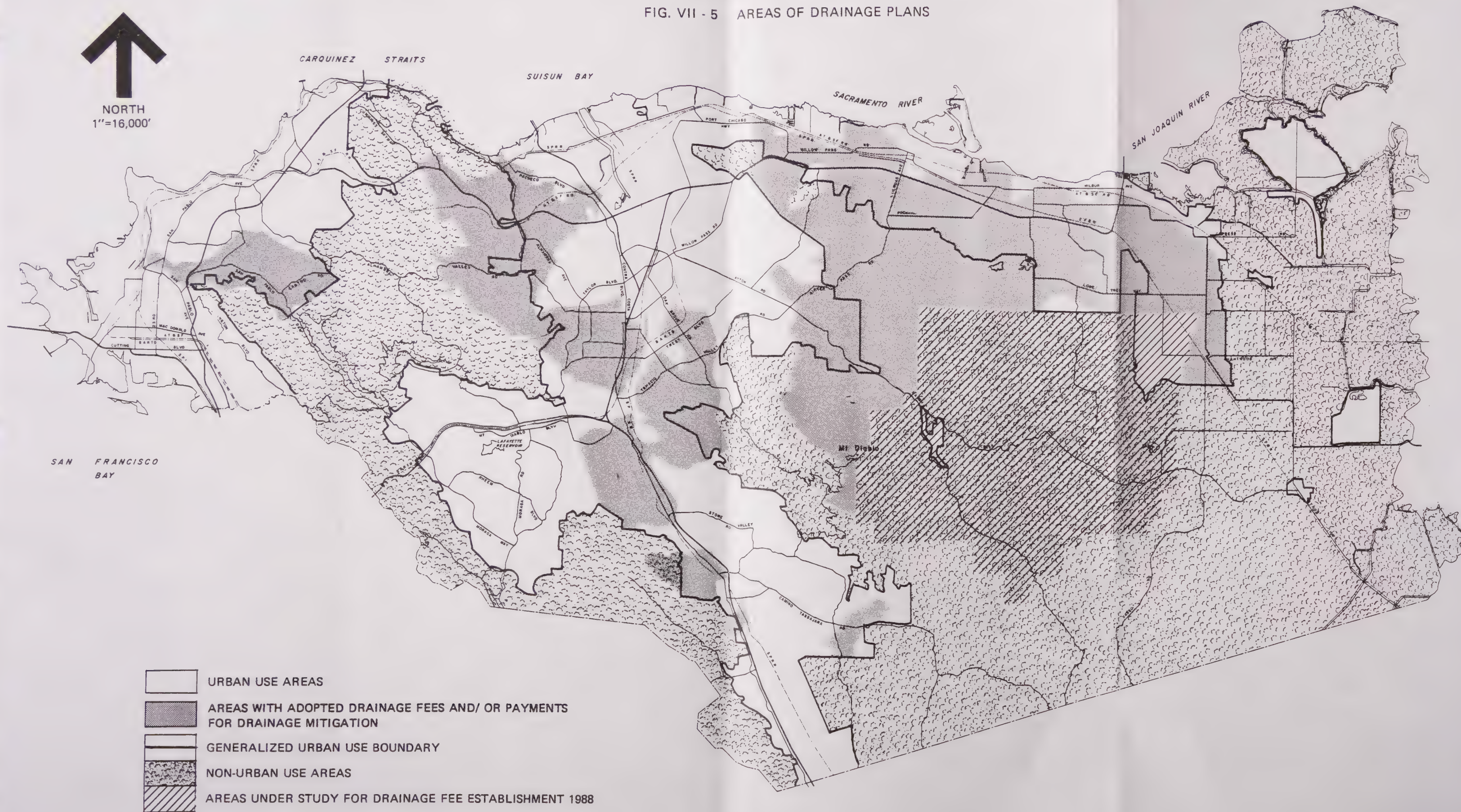
The drainage areas with established fees have undergone sufficient study by the County Flood Control and Water Conservation District for development of a drainage plan, the plan has been adopted by the Board of Supervisors, and fees have been established. Approved development projects in these drainage areas are assessed a fee based upon the impervious (impenetrable) surface that is created, or the number of acres that are developed. Also included in Figure VII-5 under this category are lands for which development is assessed flood control fees by an agency other than the County Flood Control and Water Conservation District, e.g. the City of Walnut Creek.

For other areas of the county in this category, a drainage plan has not been formally adopted and fees have not been established, although payment for drainage mitigation has been established as a condition of approval for new development. In most cases, larger development projects are required to make these mitigation payments, although the requirement may not be consistently applied to smaller projects.

- o drainage areas under study.

Figure VII-5 indicates a large area in East Contra Costa County which is currently under study by the County Flood Control and Water Conservation District. This study will lead to the preparation of a drainage plan that is designed to mitigate increased stormwater flows generated by planned development. The plan will calculate a standardized fee to be applied to all new development to fund the necessary improvements.

FIG. VII - 5 AREAS OF DRAINAGE PLANS



The third type of flood control improvement, in addition to regional and local projects needed to accomodate existing or planned development, is levee rehabilitation. Levee rehabilitation projects are required to improve the structural integrity of existing levees in the Delta area, especially in the Bethel Island, the Hotchkiss Tract and the Veale Tract areas, which are considered inadequate. The State Department of Water Resources has estimated costs of \$39, \$8 and \$5 million, respectively, that would be required for flood protection for existing land uses in these three areas. The construction of major new subdivisions adjacent to the islands may warrant even greater investments for adequate protection.

Two other issues that need to be addressed in the rehabilitation of levees are the continued settlement of the levees due to subsidence conditions, and the expected rise in Delta water surface due to the anticipated rise in ocean levels (the "greenhouse effect"). These two flood control issues are dealt with in great detail in the "Flooding" section of the Safety Element.

Implementation Measures

Flood Control Techniques

- 7-aa. Encourage gabion-type construction, instead of extensive riprap or concrete lining, to stabilize creek banks.
- 7-ab. Utilize check dams and drop structures to control erosion within natural watercourses, where creek capacity and bank stability permits.
- 7-ac. Utilize bypass culverts, detention basins, and floodplain easement acquisitions, when such means are available, as alternatives to structural modifications of watercourses.

Benefit Assessment Districts

- 7-ad. Create benefit assessment districts to pay for drainage maintenance activities resulting from new developments that require maintenance above the County standard maintenance activities.
- 7-ae. Create benefit assessment districts to pay for drainage maintenance activities in existing developed areas. Exempt agricultural land and other land uses that do not produce stormwater flows in excess of natural conditions from benefit assessments for building or maintaining drainage facilities, unless such facilities directly benefit the agricultural or open space use.

Development Review Process

- 7-af. Exclude drainage easements and areas with deeded development rights for drainage purposes in the minimum lot size determination.

- 7-ag. Encourage public fee ownership for all open, government maintained drainage facilities to ensure that the adjacent developing properties contain sufficient usable area to meet the specified land use and to provide for secondary use as recreational and visual resources.
- 7-ah. Protect natural channels that are not to be maintained by government by requiring dedicated development rights; protect storm drain pipes by requiring drainage easements; and secure open government-maintained facilities by fee title land rights.

Other Ordinances

- 7-ai. Adopt ordinances to prevent property owners from causing an obstruction in a watercourse and to establish a code enforcement program adequate to assure compliance with the ordinance.
- 7-aj. Continue to administer the Floodplain Management Ordinance.
- 7-ak. Encourage integrated pest and weed management methods which reduce or eliminate the use of pesticides and herbicides for watercourse maintenance.

Public Protection

Introduction

Public protection services are essential to the community in responding to day-to-day emergencies, as well as to potential future demands due to a major earthquake or other disaster. Policies regarding the provision of police services for day-to-day occurrences are described in this section; policies regarding disaster preparedness and response are found in the "Public Protection Services and Disaster Planning" section of the Safety Element.

Police services in Contra Costa County are provided by a number of agencies at several levels of government. These agencies include:

- o the Federal Bureau of Investigation;
- o the California Highway Patrol;
- o the Contra Costa County Sheriff's Department;
- o the individual City Police Departments;
- o the Kensington Police District (in unincorporated Kensington);
- o the East Bay Regional Parks District Police;
- o the State Park Rangers; and
- o the Bay Area Rapid Transit District Police.

In addition, several agencies within the County provide specialized protection for specific areas or types of property. These agencies include:

- o the Contra Costa County Housing Authority, which polices public housing projects;
- o the U.S. Military Police, which covers military property;
- o private patrols for some industrial and commercial developments; and
- o private patrols for some residential developments.

The Contra Costa County Sheriff's Department provides police protection services for all unincorporated areas in the County. Additionally, the Department sponsors a number of programs designed to deter crime in residential neighborhoods. These include Neighborhood Watch programs, which involve fostering acquaintance among neighbors and an attitude of care for neighboring properties, and placement of permanent identification markings on household items and signs on property indicating that valuable items have been marked (Operation I.D.). These programs have resulted in reduced rates of theft and other types of crime in neighborhoods throughout the County.

Defensible space design guidelines are also a valuable means of deterring crime in new developments. "Defensible space" is the concept of designing buildings and neighborhoods to promote the proprietary interest of the residents in neighborhood activities, to permit the identification of suspicious circumstances and persons, and to indicate to the potential criminal that he or she would have a high risk of apprehension.

The principles of defensible space include:

- o A visually well defined separation between public and private areas.
- o Well lighted and windowed apartment stairwells.
- o Apartment corridors accessible from only one exterior entrance.
- o Windows placed for easy resident surveillance of entryways of public and semipublic areas.
- o Absence of interior hiding places.
- o Short streets ending in cul-de-sacs in single-family residential areas.
- o Landscaping to permit surveillance of open areas and entryways.

Defensible space design principles have demonstrated a high rate of crime deterrence in residential as well as other types of development.

Goals

- 7-V. To provide a high standard of police protection services for all citizens and properties throughout Contra Costa County.
- 7-W. To incorporate police protection standards and requirements into the land use planning process.
- 7-X. To encourage public participation in crime prevention activities.

Policies

- 7-56. A police protection service standard of 1.5 patrol officers per 1,000 residents within unincorporated portions of the County shall be ~~achieved~~ strived for.
- 7-57. Sheriff patrol beats shall be configured to assure minimum response times and efficient use of resources.

- 7-58. A maximum response time goal for priority 1 or 2 calls of five minutes for 90 percent of all emergency responses in central business district, urban and suburban areas, shall be used by the sheriff when making staffing and beat configuration decisions.
- 7-59. Levels of service above the county-wide standard requested by unincorporated communities shall be provided through the creation of a County Service Area or other special ~~district~~ governmental unit.
- 7-60. Increased costs associated with the County's jail system shall not reduce the level of sheriff patrol service throughout the County.

Implementation Measures

- 7-al. Maintain a sheriff's sub-station in each geographical area of the county (East, West, Central, South Central) to serve the individual needs of that area, if warranted. Facility size should be commensurate with staffing needs, with provision for future expansion to match projected increases.
- 7-am. Encourage the Sheriff's Department, in cooperation with the Community Development Department, to develop guidelines for defensible space design of buildings and major subdivision projects. Include such guidelines in the review of development projects to assure that crime-inviting features are reduced or eliminated.
- 7-an. Encourage the use of citizen action programs sponsored by the Sheriff such as Neighborhood Watch and Operation ID.
- 7-ao. Consider the use of community service officers to provide law enforcement outreach programs to schools and other institutions.

Fire Protection

Introduction

A total of 19 fire departments provide fire protection and suppression services to Contra Costa County. Of this total, 12 are governed by the County Board of Supervisors. Though the County does not have governing authority over the remaining seven agencies, several important relationships exist. The jurisdictional relationships among fire protection agencies and the County are summarized in Table VII-1. All fire agencies within the County have signed mutual aid agreements to provide assistance to neighboring agencies.

Table VII-2 summarizes the departments and their jurisdictional status, organized by Fire Protection Area (FPA). The FPA's were established as part of the County's 1984 Fire Protection Plan for the purpose of projecting the geographic distribution of future growth. Table VII-2 also lists the various fire agencies which operate within each of the FPA's.

TABLE VII-1

Relationship of Fire Protection Agencies
to Contra Costa County

<u>Type of Agency Organization</u>	<u>Number of Agencies</u>	<u>Relationship to County Planning and Service Provision</u>
Fire Departments governed by the Board of Supervisors	12	Board of Supervisors establishes policy, approves budgets and implements legislation.
Independent Fire Protection Districts	3	County implements/collects development fees in the unincorporated portion of the district.
City Fire Departments	4	County has no authority.
<hr/>		
All Agencies	19	Mutual Aid Agreements exist between agencies. Land use decisions by County may influence provision of services.

TABLE VII-2

Contra Costa Fire Protection and Suppression
Services by Fire Protection Area (FPA)

<u>Area</u>	Governed by County Board of <u>Supervisors</u>	<u>Independent District</u>	<u>Department</u>
Central	Moraga FPA Orinda FPA CCC Consolidated FPA		
East	Riverview FPA Oakley FPA Bethel Island FPA East Diablo FPA Byron FPA		
San Ramon Valley	Tassajara FPA	San Ramon Valley FPD	Dougherty Regional Fire Authority (San Ramon)
West	West Co. FPD Pinole FPA Crockett-Carquinez FPA	Rodeo- Hercules FPA Kensington FPA	Richmond FD El Cerrito FD

Responsibility for the review and approval of land use applications and development projects rests with a number of agencies. Primary responsibility for fire safety review involves the fire agencies. In their review, the agencies rely upon a number of sources, including the Uniform Building Code of California (UBC), which provides standards and guidelines related to firewalls, building separation, and other fire safety related construction standards used throughout the State for reviewing projects.

In addition, the County Community Development Department, in its review and approval process of applications within unincorporated areas, relies upon standards contained in the Contra Costa County Code (Title 9: Subdivisions). The County Code includes a number of provisions relevant to fire protection and suppression as they apply to subdivision map approval. These include street design (turning radius, width, slope, etc.) and provision of fire hydrants.

The current County Sprinkler Ordinance requires that developers provide all home buyers with the option of sprinkler installation. In Planned Unit Developments with model homes, the Ordinance requires that at least one model be equipped with sprinklers. This plan endorses an amendment to the Code that would require all new residential construction to install sprinklers in all of the units.

Projects which fall within a city boundary are subject to city review rather than County review. Some cities have adopted various ordinances related to fire protection, including development standards for fire-resistant roofing materials.

The primary source of revenues for fire protection and suppression activities is property taxes. Other sources include fees and charges for inspection services, and exactions and dedications levied as conditions of project approval. Ordinances which implement development fees are established for certain districts and the Special District Augmentation Fund.

In 1986, the County adopted an ordinance to allow the establishment of fire facility fees. This policy is currently being implemented via ordinances establishing the exact amount of the fees for specific agencies' service areas. The implementing ordinances adopted by the County apply to County-governed agencies with adopted five-year plans, and agencies which are independent districts. The County collects the fees in the unincorporated portion of the independent district.

Benefit assessment districts are in the process of being implemented in service areas of County-governed agencies, under the authority of Government Code Article 3.6, Section 50078-50078.20. The County has adopted an ordinance establishing a benefit assessment district in the unincorporated area served by the Rodeo-Hercules Fire Protection District.

Redevelopment law provides for the Redevelopment Agency to "freeze" the property tax revenues allocated to other agencies within a redevelopment area, and use those revenues for redevelopment projects. While this process is intended to revitalize the redevelopment project area, it can have a negative fiscal impact upon agencies which must continue to serve the area. Currently, the County maintains an "unwritten policy" to allow fire agencies to continue to receive tax revenue increases as they occur.

Of critical importance to reducing fire-related losses are fire prevention techniques and successful fire control and extinguishment. The latter requires that fire fighters and equipment are able to arrive at the scene promptly. In light of the planning and financing efforts described above, these critical factors suggest a number of specific fire protection-related issues and requirements, as follows:

- (1) Aging fire protection facilities and equipment need to be improved and/or replaced;
- (2) Continued development in the county will require the addition of fire stations;
- (3) Reorganization of existing station locations would improve utilization of service capabilities;
- (4) Inter-jurisdictional coordination needs to be maintained and improved. For example, plans influencing future growth and development within fire service areas need to be reviewed by the affected fire service agency. Planning for fire station locations requires current knowledge of growth projections both within the fire service area as well as in neighboring areas;
- (5) The needs described above require a long-term source of funding not adequately addressed by existing sources. Proposition 13, adopted by California voters in 1978, limited property tax growth and significantly reduced fire agencies' ability to rely upon property taxes as a source of funding. Dedications and exactions as conditions of project approval are an uncertain revenue source;
- (6) Equitable means of distributing the financing burden are necessary;
- (7) Development and enforcement of standards to reduce risks of fire loss in fire hazard areas are required. This issue is particularly acute due to wildlife hazards and/or lack of adequate water provision; and
- (8) Development and enforcement of standards to reduce risks of fire loss in structural fires should continue. These standards may include, for example, built-in fire protection and extinguishment features; use of fire-retardant materials and full parapet common walls; and features to aid access to high-rise buildings.

This plan requires that adequate fire protection services be provided as part of the service standards included in the Growth Management program (Chapter IV).

Goals

- 7-Y. To ensure a high standard of fire protection, emergency, and medical response services for all citizens and properties throughout Contra Costa County.
- 7-Z. To reduce the severity of structural fires and minimize overall fire loss.

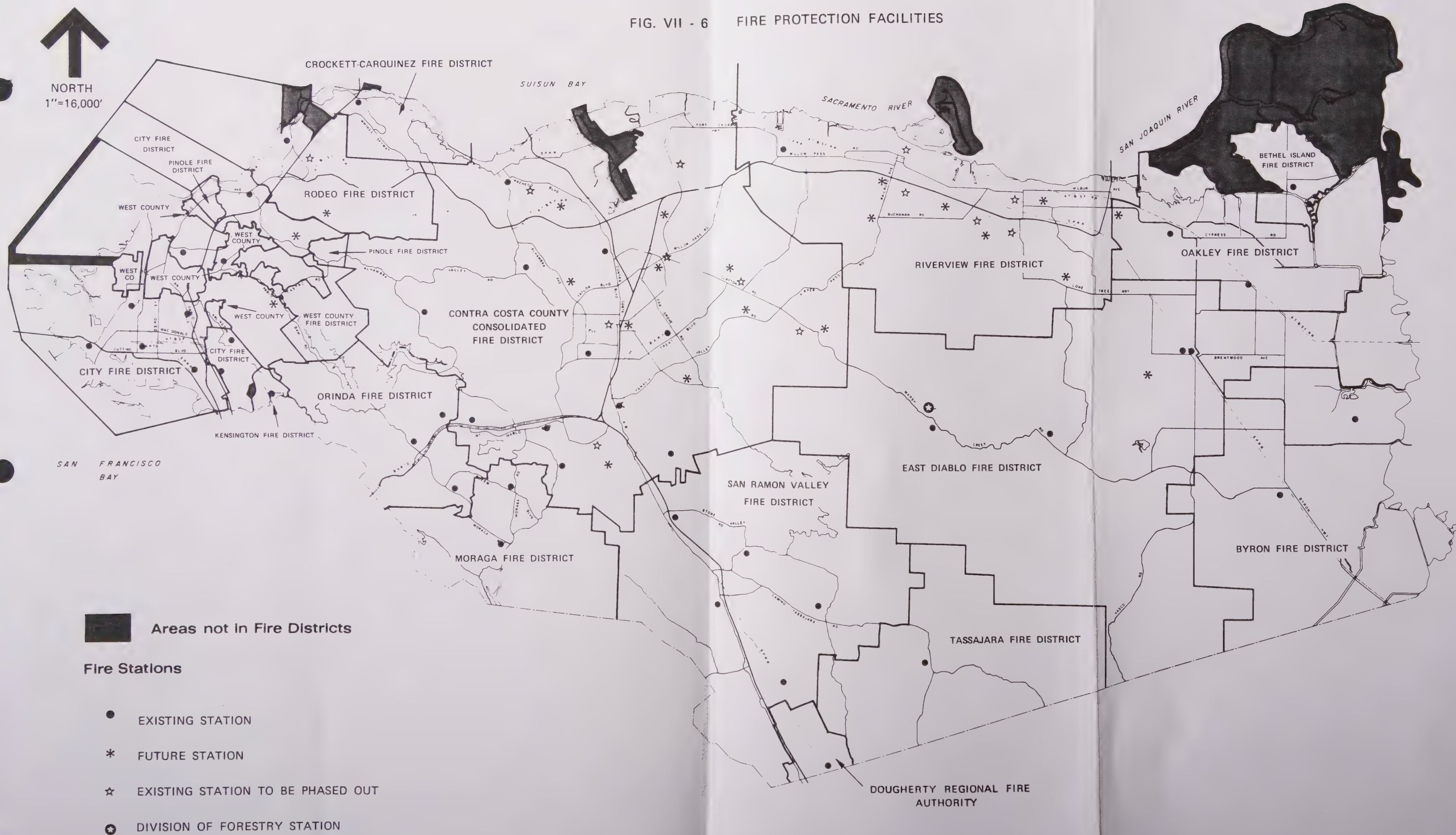
- 7-AA. To incorporate requirements for fire-safe construction into the land use planning and approval process.
- 7-AB. To minimize the cost of fire protection services through utilization of modern fire protection practices and technologies.
- 7-AC. To locate and design new fire stations in a manner compatible with surrounding development.
- 7-AD. To provide special fire protection for high-risk land uses and structures.

Policies

- 7-61. A maximum running time of 3 minutes and/or 1.5 miles from the first-due station, and a minimum of 3 fire fighters shall be maintained in all central business district (CBD), urban and suburban areas. (These types of areas are defined in Chapter IV).
- 7-62. A total response time (dispatch, plus running, plus set-up time) of five minutes shall be maintained in CBD, urban and suburban areas for 90 percent of all emergency responses.
- 7-63. New development shall pay its fair share of costs for new fire protection facilities and services.
- 7-64. Needed upgrades to fire facilities and equipment shall be identified as part of project environmental review and area planning activities, in order to reduce fire risk and improve emergency response in the County.
- 7-65. All new ~~residential~~ structures shall be equipped with sprinkler systems installed in accordance with recognized standards.
- 7-66. Consolidation of fire fighting agencies shall be considered where such reorganization will present the opportunity for enhanced level of service and/or lowered costs.
- 7-67. Factors such as response times and distance, call volume and type, population, fire flow requirements, land use, development density and valuation, and access shall be considered when evaluating proposed station locations.
- 7-68. The factors identified in the policy above shall also be used when considering conversion from volunteer to part-paid to full-paid service.
- 7-69. The effectiveness of existing and proposed fire protection facilities shall be maximized by incorporating analysis of optimum fire and emergency service access into circulation system design.

- 7-70. A set of special fire protection and prevention requirements shall be developed for inclusion in development standards applied to hillside, open space, and rural area development.
- 7-71. Special fire protection measures shall be required in high risk uses (e.g. mid-rise and high-rise buildings, and those developments in which hazardous materials are used and/or stored) as conditions of approval or else be available by the district prior to approval.
- 7-72. Fire fighting equipment access shall be provided to open space areas in accordance with the Fire Protection Code and to all future development in accordance with Fire Access Standards.
- 7-73. All new traffic signals shall be equipped with pre-emptive devices for emergency response services. Existing traffic signals significantly impacted by new development shall be retrofitted with pre-emptive devices.
- 7-74. Fire stations and facilities shall be considered consistent with all land use designations used in the General Plan and all zoning districts.
- 7-75. The architectural design and landscaping of new fire stations shall be complementary with surrounding land uses.
- 7-76. Fire stations shall be located and designed so as to minimize operating costs and maximize service standards in the area they serve.
- 7-77. Interim fire protection provisions using temporary and relocatable stations shall be considered to meet immediate, existing service needs until such time as permanent stations can be established.
- 7-78. Local fire agencies shall be encouraged to identify and monitor uses involving the handling and storage of hazardous materials.
- 7-79. Wildland fire prevention activities and programs such as controlled burning, fuel removal, establishment of fire roads, fuel breaks and water supply, shall be encouraged to reduce wildland fire hazards.
- 7-80. All structures located in Hazardous Fire Areas, as defined in the Uniform Fire Code, shall be constructed with fire-resistant exterior materials, such as fire safe roofing, and their surroundings are to be irrigated and landscaped with fire-resistant plants, consistent with drought resistance and water conservation policies.
- 7-81. Recommendations for fire district annexations, consolidations, and other service management programs shall be considered and incorporated when capital facilities funding proposals are formulated.
- 7-82. The potential cost savings of interagency sharing of support services and facilities, including training, dispatch, or administrative facilities shall be considered prior to funding capital improvements for fire protection.

FIG. VII - 6 FIRE PROTECTION FACILITIES



- 7-83. The cost-effectiveness of new fire protection facility alternatives shall be considered, and the most cost effective alternative shall be selected prior to implementation of any financing mechanism.
- 7-84. A long-term solution to financing ongoing fire protection, emergency, and medical response services shall be developed.

Map of Planned Fire Protection Facilities

Five year plans have been prepared for some of the fire agencies which are governed by the County Board of Supervisors. These plans identify locations of proposed new stations, as well as station relocations, and financing sources.

Figure VII-6 illustrates the generalized locations of existing fire stations to be retained; existing fire stations proposed for relocation; and locations of new fire stations.

Implementation Measures

Development Review Process

- 7-ap. ~~Approve~~ Withhold subdivision map approvals until fire protection service standards expressed in the growth management program and the policies of this section are met, or service levels are guaranteed to increase concurrently with new development so as to ensure future attainment of these service standards.
- 7-aq. The Community Development Department shall include fire agency code and ordinance requirements requested by the districts within the conditions of approval when subdivisions, development plans, use permits, and other entitlement requests are acted upon.
- 7-ar. Each fire protection agency under County jurisdiction shall be afforded the opportunity to review projects and shall submit conditions of approval to be included in the staff report to ensure that:
- o there is an adequate water supply for fire fighting;
 - o road widths, road grades and turnaround radii are adequate for emergency equipment; and
 - o structures are built to the standards of the Uniform Building Code, the Uniform Fire Code, other State regulations, and local ordinances regarding the use of fire-retardant materials and detection, warning and extinguishment devices.

Intergovernmental Coordination

- 7-as. The County Building Inspection Department and Community Development Department shall submit building and development plans for all new construction, including remodeling, to the local fire protection agency to assure that fire safety and control features are included that meet the adopted codes and ordinances of that agency.

- 7-at. Maintain mutual aid agreements among fire protection agencies throughout the County.

Five Year Plans

- 7-au. Periodically review and, if necessary, revise five year plans for fire protection agencies receiving fire facilities fees.

Special Ordinances

- 7-av. Modify the County Sprinkler Ordinance to be consistent with General Plan policies in this section.
- 7-aw. Develop special fire protection and prevention requirements for hillside, open space, and rural area development.

Financing

- 7-ax. Continue to levy fire facility fees for new development in unincorporated areas, in accordance with five year plans.
- 7-ay. Consider establishment of benefit assessment districts for fire protection purposes.
- 7-az. Establish a master agreement allowing fire protection agencies to continue to receive tax revenue increases in redevelopment areas, in order to allow agencies to plan for future service needs and financing in these areas.

Solid Waste Management

Introduction

In 1972, Senate Bill 5 was passed, which requires all counties to prepare County Solid Waste Management Plans. These plans, although developed and administered by the County, must also be approved by a majority of the cities containing a majority of the incorporated population and the California Waste Management Board. Therefore, the plan becomes a County, city and State plan for solid waste management. The plan covers waste generation through disposal, including collection, transportation and resource recovery. Recent amendments to the law have enhanced and added requirements concerning siting of solid waste facilities and resource recovery (including recycling).

These planning laws, along with new facility regulations by the Regional Water Quality Control Board and Bay Area Air Quality Management District, have resulted in a new era for solid waste management in the 1980's. Laws and regulations continuously change to strengthen environmental protection and to encourage and legislate waste minimization.

In Contra Costa County the private sector has traditionally been responsible for solid waste collection and disposal. Approximately 750,000 tons per year of solid waste is generated by residences, businesses and industries in the County. More detailed information regarding the source of these wastes is documented in the County Solid Waste Management Plan.

The role of government in solid waste management is one of planning, administration, and facility approval. Fourteen of the eighteen cities and eight special districts franchise solid waste collection. This means that the cities and districts enter into franchise agreements with private collectors to provide for collection services. As mentioned previously, cities and the County are responsible for development of the County Solid Waste Management Plan. Cities and counties also have land use approval over solid waste facilities located within their jurisdiction.

Presently, there are three separate landfill sites disbursed geographically throughout the county, with one site serving West County, one serving Central and South County, and another serving East County. All of these sites have very limited capacity and will be closed in the near future. At the writing of this plan, it is unknown where new landfill sites will ultimately be sited. Given new regulations and siting criteria, it is unlikely that landfills will be located near the urbanized shoreline areas of the county. However, solid waste transfer stations, processing facilities, and waste to energy projects may be located in urban/industrial areas due to the nature of these facilities.

By law, the County Solid Waste Management Plan must be consistent with the Basin Plan of the Regional Water Quality Control Board, the plans and policies of the Bay Area Air Quality Management District, and the policies of the California Waste Management Board. The siting of solid waste facilities must also be consistent with the applicable city or County General Plan.

Note that a discussion, along with goals, policies, and implementation measures, regarding the management and disposal of hazardous wastes is included in the following "Hazardous Waste Management" section. Policies regarding the transport of hazardous wastes is included in the "Hazardous Land Uses" section of the Safety Element.

Goals

- 7-AE. To provide for the safe, efficient, and cost-effective removal of waste from residences, businesses, and industry.
- 7-AF. To provide adequate disposal capacity at landfills for the County's solid waste.
- 7-AG. To reduce the amount of waste disposed of in landfills by:
 - (1) reducing the amount of solid waste generated (waste reduction);
 - (2) reusing as much of the solid waste as possible (recycling);
 - (3) utilizing the energy and nutrient value of the solid waste (waste to energy and composting); and
 - (4) to properly dispose of the remaining solid waste (landfill disposal).

- 7-AH. To divert as much waste as feasible from landfills through recovery and recycling.
- 7-AI. To assure the development of waste transfer, processing, and disposal facilities which satisfy the highest established environmental standards and regulations.
- 7-AJ. To minimize the potential impacts of waste collection, transportation, processing, and disposal facilities upon residential land uses.
- 7-AK. To provide for the safe and efficient handling of special wastes.

Policies

- 7-85. The County shall maintain a leadership role in the development of solid waste disposal facilities in cooperation with private collection and disposal businesses, the cities, and other local and regional public agencies.
- 7-86. Solid waste disposal capacity shall be considered in County and city land use planning and permitting activities, along with other utility requirements, such as water and sewer service.
- 7-87. The planning and operation of solid waste management facilities shall be coordinated with adjoining counties and with the cities within Contra Costa County.
- 7-88. The County shall assume a leadership role in the development of a comprehensive program for solid waste resource recovery in cooperation with private collection and disposal businesses and other local and regional public agencies.
- 7-89. Solid waste resource recovery (including recycling, composting, and waste to energy) shall be encouraged so as to extend the life of sanitary landfills, reduce the environmental impact of solid waste disposal, and to make use of a valuable resource, provided that specific resource recovery programs are economically and environmentally desirable.
- 7-90. Waste diversion from landfills due to resource recovery activities shall be subject to goals included in the County Solid Waste Management Plan. Public agencies and the private sector should strive to meet these aggressive goals.
- 7-91. As soon as practical, landfills shall be located within the boundaries of Contra Costa County to guarantee that the County's wastes can be disposed of without requiring approval of jurisdictions outside the County, to minimize transportation and disposal costs, to be responsible for the waste that is generated, and to ensure that County residents are not subject to waste import surcharges from other jurisdictions.

- 7-92. Contra Costa County should provide more than one landfill in the future to share the risk and impact of solid waste disposal as equitably as is practical, to reduce the risk of running out of landfill capacity, to minimize the distance that solid waste is hauled in the County, and to create competition in pricing to ensure fair disposal fees.
- 7-93. New landfills should each have a minimum capacity to handle half the County's total waste stream for at least 20 years. Siting efforts should continue until additional landfill capacity is available to handle all of the County's solid waste stream for a minimum of 50 years.
- 7-94. Sanitary landfill sites shall not be located in any environmentally sensitive areas. Landfill sites shall not be located within any area designated for open space uses unless the landfill is screened from view along public roadways.
- 7-95. New waste disposal facilities shall be located to minimize potential impacts upon existing and future residents. Waste disposal and processing facilities shall be designed, developed, and operated in a manner that is compatible with surrounding land uses.
- 7-96. Solid waste disposal sites shall be designed and operated to provide useful sites after completion of disposal operations. Re-use of sites for outdoor recreation and open space, where feasible, shall be encouraged.
- 7-97. Traffic at landfills and transportation costs shall be reduced through the use of transfer stations.
- 7-98. The general public (in cars and small trucks) shall be restricted from direct access to landfills; instead, these types of vehicles shall be directed to transfer stations. The need for transfer stations shall be based on economics, the need to mitigate traffic impacts, and the need to inspect refuse for hazardous materials and recyclables.
- 7-99. Transportation routes to transfer stations and landfills shall be included as conditions of approval in permits for the facilities, in order to identify preferred access routes which reduce traffic impacts on communities adjacent to and along the access routes.
- 7-100. Solid waste hauling on collectors and local streets through residential areas should be avoided.

Map of Solid Waste Facilities

As indicated in Figure VII-7, there are three existing landfills and one transfer station in the County. The Acme Fill transfer station has recently been approved and is under construction. Figure VII-7 does not identify potential locations of new sanitary landfills or transfer stations. This General Plan instead requires that any refuse disposal facility that is proposed must apply for an amendment to the plan as part of the approval process, according to existing Board of Supervisors policy.

Implementation Measures

Solid Waste Management Plan

- 7-ba. Ensure that solid waste activities in Contra Costa County are carried out in accordance with the Solid Waste Management Plan and are coordinated with other jurisdictions.
- 7-bb. Utilize and update the County's Solid Waste Management Plan as the principal planning document for solid waste management in the County, and ensure that its policies are based upon the population projections and geographic distributions set forth in the Land Use Element of this General Plan.
- 7-bc. Encourage cities and districts to prepare recycling/composting plans to show how they intend to help meet the goals included in the County Solid Waste Management Plan. Provide guidance and information to cities in meeting this requirement.

Review and Inspection of Facilities

- 7-bd. To ensure the health and safety of the public, inspect solid waste facilities and equipment on a regular basis.
- 7-be. Review, and amend if necessary, the Zoning Ordinance and other code sections, to ensure that waste disposal facilities are regulated to preclude all nuisance and unsightly conditions.
- 7-bf. Review land use permits for solid waste facilities at least every five years to determine if any modifications to specified conditions need to be made, to ensure that the facility is operated in an environmentally sound manner consistent with the best technology available and to ensure that the facility will remain compatible with adjacent land uses.

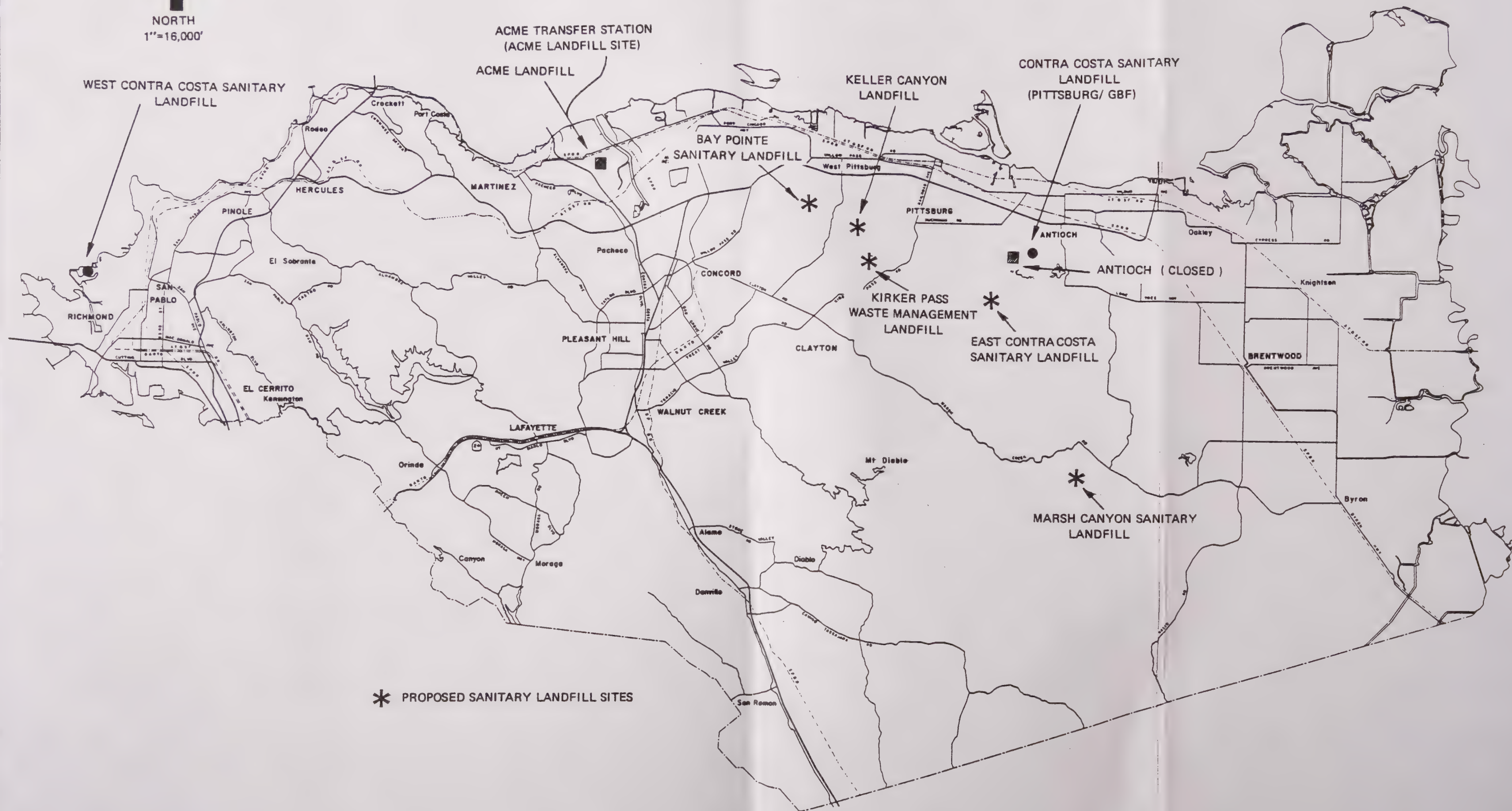
Development Review Process

- 7-bg. Review and amend existing ordinances and procedures to ensure that the review and approval of development applications is carried out in accordance with the applicable goals, policies, and implementation measures included in the Solid Waste Management Plan.
- 7-bh. When landfills are proposed, ensure that the need for transfer stations is identified consistent with the criteria in the County Solid Waste Management Plan.
- 7-bi. Require that conditions of approval for transfer stations and landfills identify preferred access routes.
- 7-bj. Utilize the capacity criteria included in the County Solid Waste Management Plan when reviewing applications for new solid waste landfills, as well as the preference to have more than one landfill within the County.



NORTH
1"=16,000'

FIG. VII - 7 SOLID WASTE FACILITIES



Hazardous Waste Management

Introduction

In response to the growing concern for the need to plan for the effective management of hazardous waste so that the protection of public health and safety and the environment is ensured, the California Legislature enacted a law which authorized counties and regional council of governments to prepare Hazardous Waste Management Plans. The intent of this law was to establish a comprehensive planning process in which State and local governments, the public, environmental groups, and industry jointly develop safe and effective solutions for the management and disposal of hazardous waste. The Contra Costa County Hazardous Waste Management Plan, prepared pursuant to State law, is a comprehensive analysis of all aspects of hazardous waste management from generation through disposal.

Contra Costa County, which historically has been an industrialized county, is one of the largest generators of hazardous waste in the State. Businesses generating the majority of the county's estimated 425,000 annual tons of hazardous waste are located along the industrial waterfront rim of the county. Two-thirds of the hazardous waste generated within the county is treated on the site where it is created, with the remaining one-third transported by truck or rail to commercial hazardous waste management facilities.

With the closure of the International Technology Class I hazardous waste disposal facility, all hazardous wastes which require commercial treatment or disposal, approximately 161,000 tons per year are shipped out of the county. One of the primary goals of the County Hazardous Waste Management Plan is to determine and provide for the capacity of commercial hazardous waste management facilities that will be needed through the year 2000, if the county is to manage the hazardous wastes that it produces.

Historically, the burden of providing commercial hazardous waste facilities for the State has been placed upon the four counties, one of which was Contra Costa, in which the Class I hazardous waste management facilities were located. One of the guiding principles in the development of the county plans is that each county should provide the necessary commercial hazardous waste management facilities to meet their needs, so that the burden is equally distributed throughout the State and the nation.

Providing for the fair-share distribution of facilities throughout the state and ensuring that California has adequate facilities to manage the state's needs can be accomplished by implementing the "fair-share" policy outlined in this section.

The Contra Costa County hazardous waste management program is established to ensure the safe and responsible management of hazardous waste within the county. This program is based on the following "hierarchy of waste management policies." The intent of the plan is to manage hazardous wastes by emphasizing the first policy as the primary determinant; if a course of action based upon the first policy is proven to be infeasible, the second, third, and fourth policies shall be followed in that order:

- o reduce the use of hazardous substances and the generation of hazardous waste at their source;
- o recover and recycle the remaining waste for reuse;
- o treat those wastes not amenable to source reduction or recycling so that the environment and community health are not threatened by their ultimate disposal;
- o increase those wastes amenable to this technology; and
- o properly dispose of treated residuals in approved residual repositories (disposal facilities such as Class I landfills).

The focus of the County's hazardous waste management strategy is to reduce the waste that is generated and to facilitate businesses to utilize waste management methods that are "higher" on the waste management hierarchy of policies.

The County Hazardous Waste Management Plan will be the primary planning document for hazardous waste management within the unincorporated areas of the County and within the eighteen cities. The County Hazardous Waste Management Plan is incorporated, by reference, into the County General Plan. The plan establishes goals and policies for the safe management of hazardous waste, and recommends the establishment of a variety of programs designed to more effectively manage the hazardous waste produced and to reduce the hazardous waste generated by 30 to 40 percent, using 1984 as a base from which to measure. The plan also sets forth siting criteria that will be used to determine whether a proposed commercial hazardous waste management facility may be located within the County. The applicable policies of the Hazardous Waste Management Plan are incorporated by reference into this General Plan.

Note that goals, policies and implementation measures involving the transportation of hazardous materials, as well as buffering requirements to be applied to certain hazardous land uses in the County, are found in the "Hazardous Land Uses" section of the Safety Element. Readers should refer to both of these sections in the General Plan to determine policies that affect all types of hazardous uses or materials.

Goals

- 7-AL. To manage the hazardous wastes that Contra Costa County produces by determining and providing for the capacity of commercial hazardous waste management facilities that will be needed in the future.
- 7-AM. To eliminate the generation and disposal of hazardous waste materials to the maximum extent feasible, by:
 - (1) reducing the use of hazardous substances and the generation of hazardous waste at their source;
 - (2) recovering and recycling the remaining waste for reuse;

- (3) treating those wastes not amenable to source reduction or recycling so that the environment and community health are not threatened by their ultimate disposal;
- (4) incinerate those wastes amenable to this technology; and
- (5) properly disposing of treated residuals in approved residual repositories.

7-AN. To minimize the need for additional and/or replacement hazardous waste disposal sites.

Policies

- 7-101. The County shall follow the "hierarchy of hazardous waste management goals" above by emphasizing the first goal (reducing waste at the source) as the primary determinant; if a course of action based upon the first goal is proven to be infeasible, the second, third, fourth, and fifth goals shall be followed in that order.
- 7-102. The volume and toxicity of hazardous waste generated within the County shall be reduced by 30 to 40 percent by the year 2000, using the amount generated in 1984 as a base from which to measure.
- 7-103. The County shall actively support the development of alternative technologies and methodologies of hazardous waste management which demonstrate a reduction in relative risk to human health and the environment.
- 7-104. A hazardous waste transfer station should be available in West, East and North Central County.
- 7-105. Contra Costa County will accept its fair share of hazardous waste management facilities to serve the local area, region and state.
The County will act to provide for the safe, effective management of hazardous wastes generated within the county. New off-site hazardous waste management facilities shall be primarily limited to a scale necessary to meet the hazardous waste management needs of this county: larger facilities may be permitted in accordance with agreements reached between this county and other jurisdictions or upon determination of the local governing body that the project meets local planning criteria and serves public needs.
- 7-106. The siting of hazardous waste management facilities necessary to meet the County's needs shall be encouraged within Contra Costa County, according to adopted criteria included in the Hazardous Waste Management Plan, as well as the criteria presented in the following policies.
- 7-107. Facilities shall be designed to minimize risk to neighbors in the case of an accident or spill of hazardous wastes. All facilities shall be sited to avoid or minimize risk to neighbors in the case of an accident or spill of hazardous wastes. All facilities shall be sited to avoid or minimize risk to neighbors in the case of an accident or spill of hazardous wastes.

- 7-108. To the degree necessary to protect human health and the environment, hazardous waste management facilities with similar general treatment methods, as defined in the County Hazardous Waste Management Plan, should not be concentrated in the same area of the County.
- 7-109. Hazardous waste management facilities must have sufficient water, sewer and emergency services, including police, fire, emergency medical and hazardous materials response. Self-sufficient services must be provided when water, sewer and emergency services are not adequate. Potential sites should be located in areas where there is more than one access route for emergency services.
- 7-110. Hazardous waste management facilities should be located so as to minimize any additional noise impacts on the surrounding area. Mitigation measures to reduce noise from facility equipment or traffic may be required.
- 7-111. Access to hazardous waste facilities shall be prohibited through residential areas. Access can be allowed on roadways that are adjacent to residential areas where residential frontage is minimized, where there are physical barriers separating residences from the road, or where there are adequate residential setbacks from the road. This policy does not apply to facilities solely dedicated to the collection and transfer of household hazardous waste.
[delete previous policy]
- 7-112. Residual repositories shall not be located in areas that utilize a residential well system, as defined in the adopted general, regional, or State plans. Other types of hazardous waste management facilities located within these areas must provide properly engineered spill containment and inspection measures.
- 7-113. Residual repositories shall not be located in the watershed of a reservoir.
- 7-114. Hazardous waste management facilities, with the exception of residual repositories, shall not be located on a site with slopes greater than twenty six percent.
- 7-115. Hazardous waste management facilities located near wetlands or marshlands must have engineered design features to ensure that contamination of the adjacent wetland or marshland would not occur in the event of a spill or accident.
- 7-116. Facilities shall be buffered from the nearest residential zone or residence. The size of the buffer zone shall be determined by the Environmental Impact Report and the Health Risk Assessment.
- 7-117. Facilities shall be buffered from immobile populations, such as schools, hospitals, convalescent homes and prisons. The size of the buffer zone shall be determined by the Environmental Impact Report and the Health Risk Assessment.
- 7-118. The accelerated clean-up of contaminated sites, including containment of the sites as quickly as possible, shall be supported, commensurate with minimizing the risk to the environment and to public health.

- 7-119. Health risk screenings, as required by the Bay Area Air Quality Management District or other regulatory agencies, shall be completed for all proposed hazardous waste facilities. Health risk assessments shall be prepared if determined as necessary by the health risk screening. Risk assessment analysis should include the cumulative impacts of other hazardous waste management facilities in the general area, as well as other sources of pollutants which are present in the general area.
- 7-120. Facilities near rivers, streams, creeks, lakes, etc. must have engineered structural design features to ensure that mitigation of waste will not occur (e.g. spill containment and monitoring devices).
- 7-121. The health risk assessment and environmental impact reports for hazardous waste facilities shall consider the need for buffer zones to separate the facility from environmentally sensitive land uses such as wetlands and critical habitat areas.
- 7-122. If mitigation of air quality impacts take the form of offsets, the offsets obtained shall be from sources as near to the proposed facility as possible.

Map of Hazardous Waste Facilities

There are three existing landfills and one transfer station in the County, as indicated in Figure VII-8. The Acme Fill transfer station has recently been approved and is under construction. As in the case of solid waste facilities, Figure VII-8 does not identify potential locations of new hazardous waste treatment facilities, landfills, or transfer stations. This General Plan instead requires that any refuse disposal facility that is proposed must apply for an amendment to the plan as part of the approval process.

Implementation Measures

- 7-bk. Establish a coordinated program of public awareness and public education for the implementation of the County Hazardous Waste Management Plan, especially for the siting of the needed new hazardous waste management facilities.

Development Review Process

- 7-bl. Review and amend ordinances and procedures to ensure that the review and approval of development applications is carried out in accordance with the applicable goals, policies, and implementation measures included in the Hazardous Waste Management Plan.
- 7-bm. Require a site specific transportation analysis for each hazardous waste facility proposed within Contra Costa County, and request an analysis for projects proposed in adjacent counties, to determine how localized traffic and safety impacts can be mitigated.

New Ordinances and Programs

- 7-bn. Prepare and adopt an ordinance that would require businesses to submit to the County plans for waste minimization, as well as hazardous waste

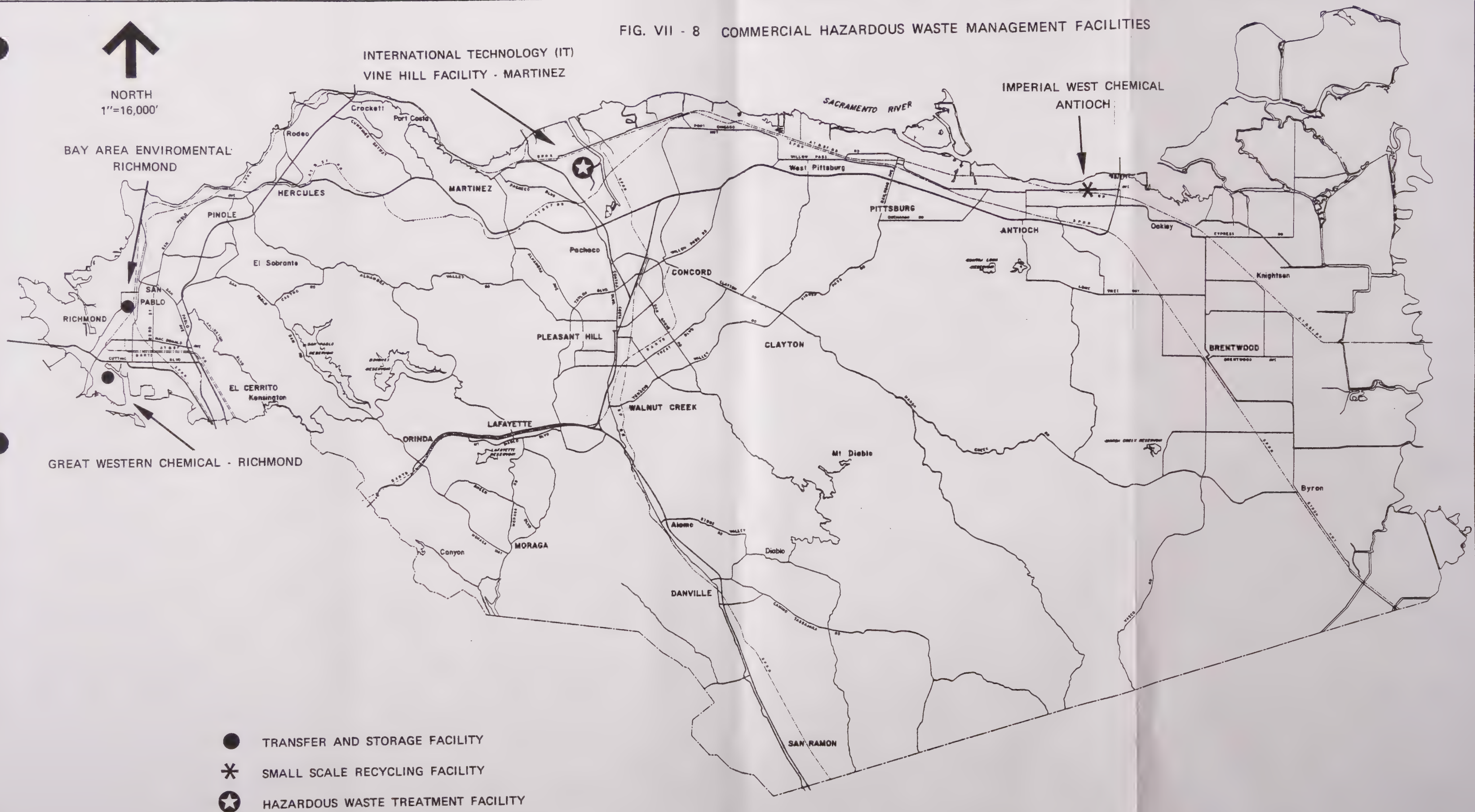
generation, treatment and disposal reports currently sent to other regulatory agencies.

- 7-bo. Establish a Waste Minimization and Small Business Generator program, which will provide direct assistance to businesses and industries to minimize waste generation.
- 7-bp. Establish a household Hazardous Waste Disposal program, which will provide ongoing collection sites for household hazardous wastes and will use a public education/awareness program to encourage the use of non-hazardous products.
- 7-bq. Establish a comprehensive Public Education program, which should includes a school curriculum program, an elected officials program, and a media program to create a better understanding of hazardous waste management issues throughout the County.
- 7-br. Develop a program to inventory information on contaminated sites, which will allow the County Health Services Department to advise local Planning Departments on the need to restrict or control land uses in the vicinity of these sites.
- 7-bs. Prepare and adopt an ordinance which would require the formation of Citizen Communication and Information panels for new commercial hazardous waste facilities and would encourage the establishment of these panels for existing facilities. The intent of these panels is to establish and maintain communication between the facility and the local community.
- 7-bt. As data is derived from generator programs administered by the County Health Services Department, establish additional policies or programs, as needed, to assist the small generators in effectively reducing and managing their hazardous waste.

Intergovernmental Coordination

- 7-bu. Work diligently with other counties, regional governments and the State to ensure that the fair share concept will provide the needed hazardous waste management facilities throughout the State.
- 7-bv. Request the County Hazardous Materials Commission to review local regulatory programs to ensure coordination of regulatory activities.
- 7-bw. Request the State Department of Health Services to develop a program to provide counties with import/export data necessary to meet inter-county information sharing requirements.
- 7-bx. Lobby with the State, the Federal government and the private sector, to encourage changes in product development, labeling, packaging and handling to reduce the amount of household hazardous waste that is generated.
- 7-by. Encourage local law enforcement agencies and the California Highway Patrol to increase inspections of hazardous waste/materials carriers.

FIG. VII - 8 COMMERCIAL HAZARDOUS WASTE MANAGEMENT FACILITIES



**CONTRA COSTA COUNTY
CALIFORNIA**

Parks and Recreation Facilities

Introduction

A recreation component of the General Plan is required to plan for the recreational lands and facilities necessary to fit the needs and desires of the community, while coordinating these plans with the other elements. State law requires that a recreation component be adopted for a jurisdiction to be able to exercise a subdivision parkland dedication ordinance.

The County's role in park and trail planning covers a broad spectrum of concerns. The County prepares plans for recreational facilities that serve the County population as a whole and work toward coordination of park and recreation efforts of Federal, State, regional and local agencies. At the same time, the County is directly responsible for recreational planning for the unincorporated communities.

Goals

- 7-A0. To develop a sufficient amount of conveniently located, properly designed park and recreational facilities to serve the needs of all residents.
- 7-AP. To develop a system of interconnected hiking, riding and bicycling trails and paths suitable for both active recreational use and for the purpose of transportation/circulation.
- 7-AQ. To promote active and passive recreational enjoyment of the county's physical amenities for the continued health, safety and welfare of the citizens of the county.

Policies

- 7-123. Major park lands shall be reserved to ensure that the present and future needs of the county's residents will be met and to preserve areas of natural beauty or historical interest for future generations.
- 7-124. A well-balanced distribution of local parks, based on character and intensity of present and planned residential development and future recreation needs, shall be reserved.
- 7-125. Park design shall be appropriate to the recreational needs and access capabilities of all residents in each locality.
- 7-126. Regional-scale public access to scenic areas on the waterfront shall be protected and developed, and water-related recreation such as fishing, boating, and picnicking, shall be provided.

- 7-127. As a unique resource of statewide importance, the Delta shall be developed for recreation use in accordance with the State environmental goals and policies. The recreational value of the Delta shall be protected and enhanced.
- 7-128. Public funds from agencies such as the Department of Fish and Game shall be utilized to purchase levees and acquire easements.
- 7-129. Public trail facilities shall be integrated into the design of flood control facilities and other public works whenever possible.
- 7-130. Recreational development shall be allowed only in a manner which complements the natural features of the area, including the topography, waterways, vegetation and soil characteristics.
- 7-131. Recreational activity shall be distributed and managed according to an area's carrying capacity with special emphasis on controlling adverse environmental impacts, such as conflict between uses and trespass. At the same time, the regional importance of each area's recreation resources shall be recognized.

Maps and Descriptions of Parks and Recreation Facilities

This parks and recreation plan is divided into separate sections addressing major parks and open space areas, local parks, and trails and paths.

a. Major Parks and Open Space Areas

The provision of major parks to serve the urbanized areas is essential to the physical and mental well-being of all segments of their populations, as these parks form a counter balance to the often intense pace of urban life. Major parks provide areas where people can enjoy forms of active and passive recreation not otherwise available such as nature studies, camping, or just observing the natural landscape.

The preservation of lands for outdoor recreation also assists in the conservation of the county's unique natural, scenic, or cultural resources. Such preservation provides for recreational opportunities while helping to maintain the quality of life for county residents and visitors. Major park facilities in the county are owned by the Federal and State governments, along with an extensive system operated by the East Bay Regional Park District. Additionally, there are some municipal facilities which are major parks. For the purpose of this plan, the following definitions shall apply:

Major Parks are intended to provide a broad range of recreational opportunities, which may include hiking, bicycling, equestrian use, fishing, swimming, camping or group sports, etc. Preservation of historical structures also are included within this grouping.

Major Open Space Areas are lands within public ownership of significant undeveloped areas. The major purposes of these areas are to protect the unique nature of these lands through passive recreational activities that do not require substantial facilities or improvements. Agriculture is an appropriate secondary use.

The existing and proposed Major Parks and Major Open Space Areas are shown on Figure VII-9. While major parks usually cover areas over 100 acres, shoreline and marsh areas may be much smaller, reflecting the unique areas they protect. With recent voter approval of State and regional park bonds, this plan anticipates the expansion of existing major park and open space facilities.

The two primary agencies administering major parks in the county are the State Department of Parks and Recreation and the East Bay Regional Park District. The State Department of Parks and Recreation operates two parks, Mt. Diablo State Park and Franks Tract State Recreation Area. These parks are intended to serve the population of the State as a whole, not just residents of Contra Costa County.

The East Bay Regional Park District encompasses all of Contra Costa County and most of Alameda County. The district currently maintains 26 parks within or potentially within the county, performing the function of providing major park facilities which is normally undertaken by County government. They maintain parks in differing types which are classified as Regional Parks, Regional Preserves, Regional Recreation areas, Regional Shorelines, Regional Wilderness Areas and Regional Open Spaces. These facilities are included within the major parks definition, except for the Regional Open Spaces, Regional Preserves, and Regional Wilderness Areas, which are included within the Major Open Space Area definition.

There are other agencies which operate major park facilities within the county. The U. S. National Park Service operates the John Muir National Historic site in Martinez and the Tao House in Danville. The East Bay Municipal Utilities District owns substantial acreage of open space lands, some of which has a secondary recreation function, e.g. Lafayette and San Pablo Reservoirs. Additionally, the cities of Pittsburg, Walnut Creek, and Concord operate facilities which serve a major park function.

While no county standard is included for Major Parks or Open Space areas, there are numerous areas within the county which deserve to be placed in new parks or added to existing ones. This plan endorses the expansion of Major Park and Open Space Areas to protect the unique resources of the county.

New opportunities for parks arise when additional lands are acquired for other purposes, such as the proposed Los Vaqueros Reservoir in Southeast County. It is anticipated that if one or more reservoirs are constructed within that area, there will be recreational facilities associated with the water project. A park symbol is shown on the Parks and Recreation map to recognize potential parks and recreation uses within the Los Vaqueros watershed area.

There are other locations within the Southeast County area which have potential for development of major new recreational facilities; however, plans for their acquisition are just now being realized. At the time that the East Bay Regional Park District or another public agency is prepared to consider seriously the establishment of such facilities, these proposed facilities should be reviewed by the County to insure compatibility with the concepts found in this plan and with adjacent existing land uses. Among the sites with such potential are Round Valley (a significant property has recently been acquired by the Park District), Byron Hot Springs, and the Vasco Caves area.

b. Local Parks

Local parks are areas of open space set aside for recreational use and are located within easy distance of the people they serve. They can be the focal points for neighborhoods and communities where people can meet and enjoy their leisure time together. Local parks give a visual counterpoint to the often intense developed areas in which they are located. The more intense the development, the greater the need for adequate parks.

This plan for local parks specifies the County's standards and general locations of existing and proposed facilities. While the map of local park facilities (Figure VII-10) shows a countywide distribution, it has enforceable effect for the unincorporated area only. Where differences exist between this plan and those of a city, the city plans will take precedence within incorporated areas.

For the purpose of this plan, local parks are differentiated into neighborhood and community parks. Neighborhood parks generally have service areas equivalent to elementary schools, while community parks more commonly are equivalent to high school service areas. The size and location of local parks will vary depending on the population density of the area to be served. The size of a park will vary with the population to be served. The greater the proposed population, the greater the size of the park necessary to serve a given area.

County park standards for local and community parks and types of play areas are shown on Table VII-3.

Most local parks are currently located within incorporated areas. The County requires that special units of government, e.g. County Service Areas, be established to maintain these local facilities. County Service Areas are preferred over autonomous units of government, due to the ease which their boundaries can be modified or eliminated during incorporations. In areas planned for development, efforts should be made to encourage new County Service Areas to provide for maintenance of local parks.



NORTH
1"=16,000'

FIG. VII - 9 MAJOR PARKS AND OPEN SPACE AREAS

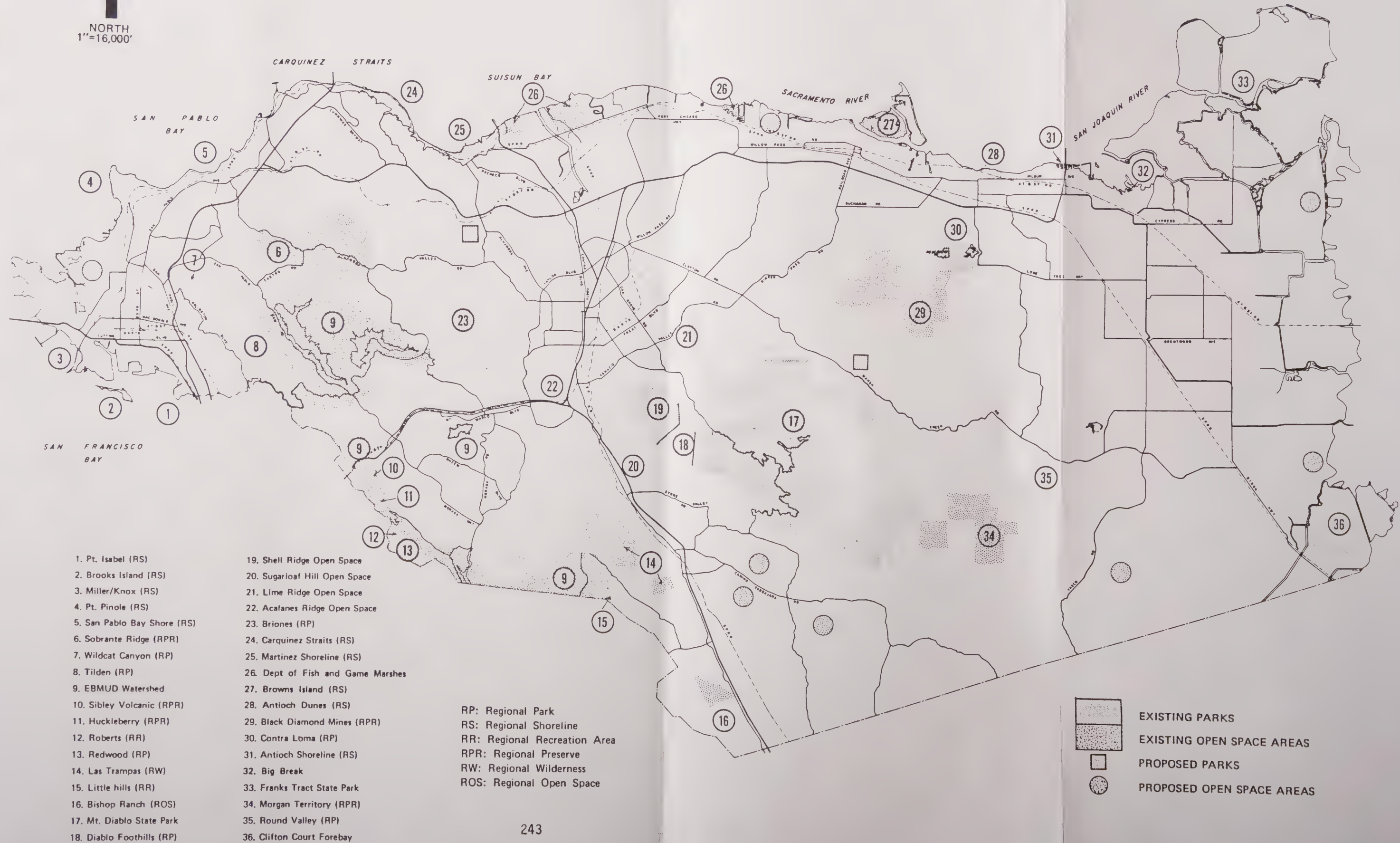


FIG. VII - 10 LOCAL PARKS



NORTH
1"=16,000'



- EXISTING NEIGHBORHOOD PARKS
- ★ PROPOSED NEIGHBORHOOD PARKS
- EXISTING COMMUNITY PARKS
- PROPOSED COMMUNITY PARKS

TABLE VII-3
County Park Standards and Criteria

1. Playlots

- a. Site Area: 2,000-5,000 square feet for either an independent site or that portion of a playground developed as a playlot.
- b. Location: Independent sites located in the centers of apartment projects or planned unit developments which they are intended to serve.
- c. Facilities: Basic facilities include playground equipment for preschool children (swings, slides, climbing apparatus) and shaded bench area for parents. Additional facilities include sandboxes, spray pools, and both grassed and hard-surfaced play areas.

2. Playgrounds

- a. Site Area: Independent site -- 3-7 acres; in conjunction with park or school -- 3-5 acres.
- b. Location: Central to neighborhood served, preferably accessible without having to cross traffic arterials or railroads.
- c. Facilities: Basic facilities include playground equipment for elementary school children plus both hard-surfaced and grassed play areas. Additional facilities include playlot, shelter, sports and game areas (baseball diamonds, tennis courts, and wading and swimming pools).
- d. Service Radius: One-half mile; larger in areas of low population density or unusual topography.
- e. Association: Playgrounds should be developed in conjunction with elementary schools and parks for maximum effectiveness. Location within independently-situated play fields and parks is also desirable.

3. Playfields

- a. Site Area: 10 acres minimum, 15 acres desirable; 12 acres minimum, 17 acres desirable for sites with playground facilities.
- b. Location: Central to four or five neighborhoods (roughly four or five elementary school service areas).
- c. Facilities: Primary facilities include game courts, sports fields, lawn games area. Secondary facilities include swimming pool, shelter house or recreation building, parking lot.
- d. Association: Playfields adjoining high school sites or community parks are particularly appropriate. Playlots and playground should also be included.

**TABLE VII-3
(continued)**

4. Neighborhood Parks

- a. Acreage/Population: 2.50 acres per 1,000 population.
- b. Site Area: Without playground -- 3-7 acres; with playground -- 6-8 acres; with playfield -- 12-17 acres.
- c. Location: Identical to playgrounds -- center of neighborhood.
- d. Facilities: (Park area only) Landscaped open space (trees, grass, shrubbery), benches and tables, and walks.
- e. Service Radius: One-half mile.
- f. Association: Neighborhood parks are best located adjacent to playgrounds, playfields and elementary schools. They may also contain a neighborhood recreation center.

5. Community Parks

- a. Acreage/Population: 1.50 acres per 1,000 population.
- b. Site Area: Independent sites -- 15-20 acres. With playgrounds and playfield -- minimum 25 acres, recommended 40-50 acres.
- c. Location: In the center of a group of neighborhoods. The site should have some natural features of interest such as water frontage or rough topography if possible.
- d. Service Radius: Two miles.
- e. Facilities: Both landscaped and natural open space, playgrounds and playfields, parking, special facilities such as golf, boating and swimming, and a community center.

c. Trails and Paths

Trails provide a linear corridor that is primarily for pedestrian, equestrian and bicycle use. Most trails in the county are established for recreational use, though increasingly some are utilized for commute and transportation purposes. As such this plan is functionally also a part of the County's Transportation and Circulation Element. Note that there are additional policies relating to the transportation aspect of on-street bikeways and trails in the Transportation and Circulation Element. This plan is divided into three separate components dealing with riding (equestrian), hiking and bicycle facilities.

In many cases, trails can be utilized for more than one purpose. For ease of presentation, however, these three trail plan components are discussed and mapped separately. While the trails plan is countywide in nature and relies heavily on municipal plans in these areas, not all trails within those areas are shown, only the regional link are included. This plan does, however, encourage that local feeder trails and paths be developed to provide an interconnected system which can work as a circulation component as well as providing recreational opportunities. The County Trail Plan focuses on non-motor oriented facilities in order to maintain peace and tranquility for its users.

The Bicycle Trails Plan is shown on Figure VII-11. Two types of bike trails are shown on the map: primary and secondary paths. The following definitions are to be used in this plan:

Bicycle Trails. Trails of the class connect residential neighborhoods and major destinations of bicycle traffic. They will normally accommodate high volumes of short distance traffic as well as inter-community movement. Ultimately, Primary Bicycle Paths are expected to be developed on their own pathways which are physically separated from other trails or from vehicular traffic.

The Hiking Trails Plan is shown on Figure VII-12. The following definitions are used in the plan:

Hiking Trail. All trails included in this plan are major, or primary, trails. These are intended for external travel by individuals or groups of varying skills and ages. They typically connect important trail use destinations such as major parks and points of special interest. Hiking trails may be paved or, preferably, surfaced with resilient materials to keep down dust and permit travel in all weather.

The Riding (Equestrian) Trails Plan is shown on Figure VII-13. The following definitions are used in the plan:

Riding Trail. All trails included in this plan are major, or primary, trails. These are intended for extended travel by riders of varying skills and age groups. They typically connect important trail use destinations such as major parks and points of special interest. Riding trails usually are not paved, but preferably are surfaced with resilient material to keep down dust and permit travel in all weather.

Staging Areas. Staging areas are facilities for the assembly of trail user groups and for the parking of vehicles and accessory vehicles such as horse trailers. They need to be located adjacent to both trails and access roads. These areas also should be considered to be trail features and installed by either trail-providing agencies or the user groups. This is not a complete mapping of appropriate areas but an initial listing.

d. Private Recreational Facilities

Increasingly, private developments are being considered which provide on-site recreational facilities to serve project residents. These facilities provide project amenities and are effective sales tools. They may limit the effect of new homes on the existing public park facilities, but generally they provide compatible facilities to those of the public parks. For this reason, credit from the park dedication ordinance requirements should only be given where it is clear that they provide facilities which are open to and serve the public.

This plan encourages the placement of such facilities in private developments and encourages the development of pathways that are integrated in location and design to those of adjacent projects.

Additionally, there are current uses, such as sanitary landfills or quarries, which upon completion of their active lives, all or part of the site may shift to recreational and open space uses. Where the public health can be guaranteed, the preservation of these areas for recreational and open space purposes should be considered.

In appropriate locations, the provisions of outdoor recreational facilities, e.g. private campgrounds, could add to the recreational diversity of the County. Design of such facilities needs to be of a high standard to be compatible with the adjacent rural environment.

There are resource areas within the county, e.g. the San Pablo Bay and throughout the Delta, where substantial potential exists for private recreational development. These should be encouraged if the projects include programs for environmental enhancements to their immediate areas and are limited to extensive recreational facilities.

Additional marinas to serve the Delta and the Bay may be permitted in select areas if they meet the criteria included in the following "Implementation" section.

The joint use of recreational facilities is encouraged. For example, substantial potential exists for trails to be developed along PG&E and utility pipeline rights-of-way.

FIG. VII - 11



NORTH
1"=16,000'

CARQUINEZ STRAITS

SUISUN BAY

SACRAMENTO RIVER

SAN JOAQUIN RIVER

SAN PABLO
BAY

SAN FRANCISCO
BAY

BICYCLE TRAILS

BICYCLE TRAILS IN INCORPORATED AREAS

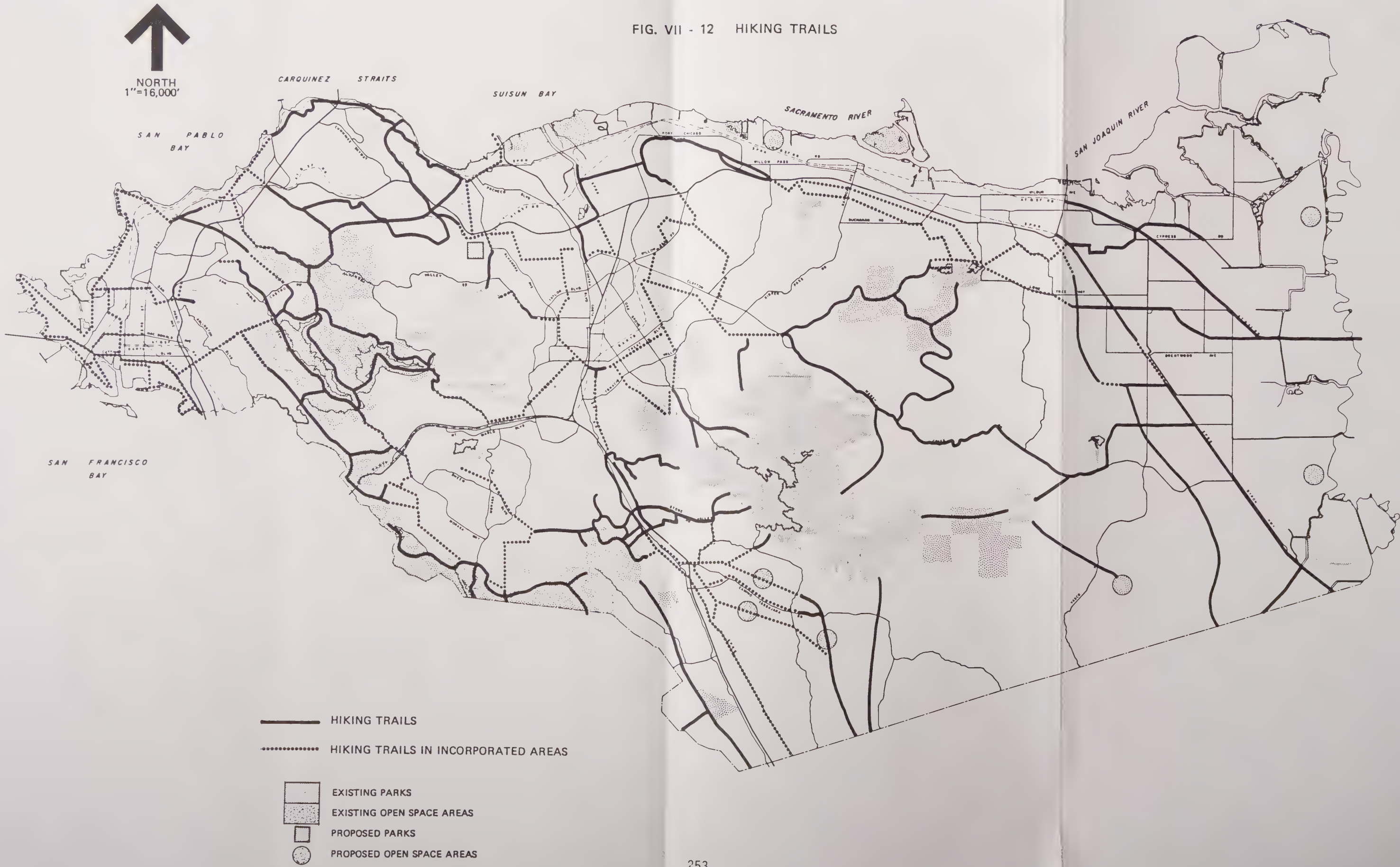
EXISTING PARKS

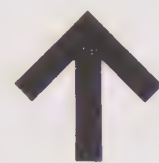
EXISTING OPEN SPACE AREAS

PROPOSED PARKS

PROPOSED OPEN SPACE AREAS

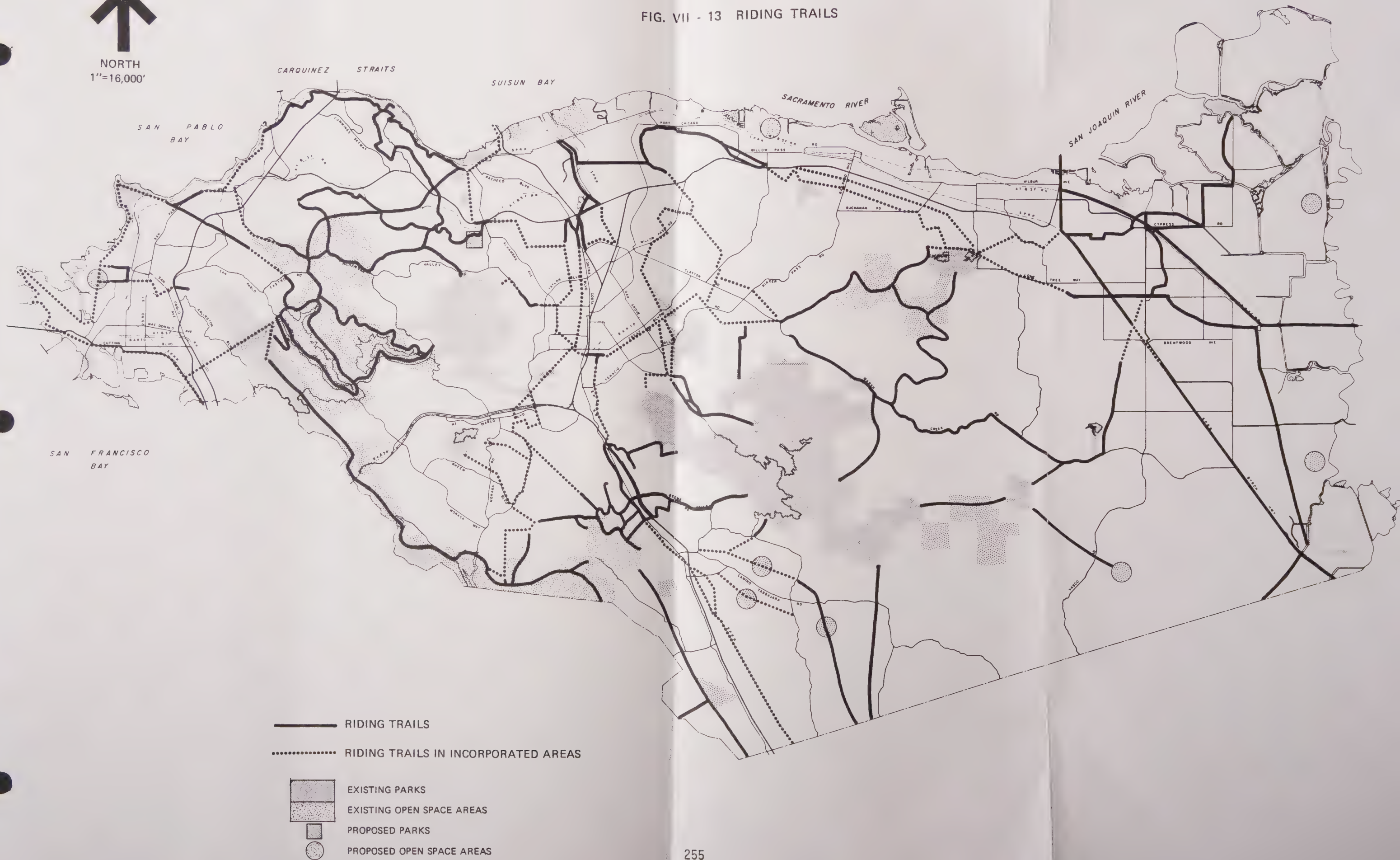
FIG. VII - 12 HIKING TRAILS





NORTH
1"=16,000'

FIG. VII - 13 RIDING TRAILS



Implementation Measures

Ordinances and Programs

- 7-bz. Complete a comprehensive study of all open space lands in the county to determine the areas that are most suitable for future park acquisition.

Development Review Process

- 7-ca. Require that new development meet the park standards and criteria included in the growth management program and set forth in Table VII-3. Ensure that credit for the park dedication ordinance requirements be given for private recreation facilities only after a finding has been adopted that the facilities will be open to and serve the public.
- 7-cb. Permit additional marinas to serve the Delta and the Bay in select areas if they meet the following criteria:
 - (1) where projects can be clustered and located adjacent to similar uses;
 - (2) along waterways having an adequate channel width as defined by the State Harbors and Navigation Code;
 - (3) in areas having adequate public vehicular access;
 - (4) where off-site improvements, such as required access roads, can be assigned to development;
 - (5) where adequate on-site sewage disposal can be provided;
 - (6) where located in an area served by a public fire protection district; and
 - (7) when such uses will not conflict with adjacent agricultural uses.

Intergovernmental Coordination

- 7-cc. Coordinate with the various school districts in the county to provide for the joint use of recreation facilities.
- 7-cd. Coordinate funds and programs administered by County government and other agencies, such as the East Bay Regional Park District, to obtain optimum recreation facilities development.
- 7-ce. Develop a comprehensive and interconnected series of hiking, biking and riding trails in conjunction with cities, special districts, public utilities and county service areas.

Funding

- 7-cf. Form a county-wide committee to explore funding sources for recreation and open space to support regional, community and local park and trails on a countywide basis.

7-cg. Work with local unincorporated communities to determine the means of providing local park services where the need presently exists, as well as when development occurs.

7-ch. Increase the park dedication fee to a level which approaches the local park dedication standards called for in this Plan.

Schools

Introduction

The provision of adequate school facilities and an effective education program is necessary to the long range economic health and vitality of the County. The financing and implementation of school facilities is shared by the State, local school boards, and the Contra Costa County Junior College District.

Although the State of California has preempted the field of provision of school facilities through development exactions, it is the responsibility of local government to ensure that the timing of growth is coordinated with the efforts of the school districts to provide school facilities. For this reason, the Contra Costa County General Plan addresses the provision of school facilities. It is well recognized in California that all children have a right to equal access to quality educational opportunities. It is therefore appropriate that the County General Plan address the changing needs for educational facilities which is generated by the amount and location of growth in population envisioned by this plan.

Private schools also exist in the County which provide an alternative to public schools for those that can afford and choose this option. They add vitality to the overall educational community.

Goals

7-AR. To assure the provision of adequate primary, secondary, and college facilities in the County.

7-AS. To provide new schools in optimal locations to serve planned growth.

7-AT. To encourage the efficient multipurpose uses of school facilities.

7-AU. To assure that school facilities are adequate or committed to be adequate, prior to approvals of major applications for residential growth.

Policies

7-132. The environmental review process shall be utilized to monitor the ability of area schools to serve development.

- 7-133. During the development review process, the State classroom size standards set by each district for primary and secondary schools shall be used as the basis for determining the adequacy of area schools.
- 7-134. When considering General Plan Amendment requests which increase density, the capacity of area schools and the district shall be given close attention.
- 7-135. The hearing body in reviewing residential projects shall consider the availability of educational facility capacity ~~or the means of providing it in determining whether to approve or deny a project.~~
- 7-136. The development of quality schools shall be supported by coordinating development review with local school districts including such activities as designating school sites, obtaining dedications of school sites, and supporting local fees, special taxes, and bond issues intended for school construction.
- 7-137. Adequate provision of schools and other public facilities and services shall be assured by coordinating review of new development with the cities and other service providers through the Growth Management Program (see Chapter IV), the environmental review process, and other means.
- 7-138. School site donation by developers shall be encouraged through the use of density transfer or other appropriate land use alternatives.
- 7-139. The development of school facilities shall be provided in conjunction with and adjacent to local parks and trailways.
- 7-140. The County shall support efforts to create a branch state college on the Ygnacio Valley site in Concord.
- 7-141. The County shall support efforts to build a new junior college in the San Ramon Valley in a central location.
- 7-142. The County shall support school facility fees for growth impacted school districts.

Implementation Measures

- 7-ci. In concert with the school districts, prepare an education facilities plan amendment to this General Plan which recommends locations for future school facilities.
- 7-cj. Lobby for State financing of new schools within the County.

Child Care

Introduction

The concept of child care is based upon the premise that children need and have a right to safe, healthful and caring environments. Child care needs were first recognized by American government during World War II, as a result of contributions made by men and women to the war effort. In response to the changing characteristics of the workforce, government began to fund child care programs.

The continued interest of both men and women in maintaining employment, the need for two income households to meet the increasing cost of living, particularly for shelter costs in the county, and the growing number of single parent households, again calls for government to assure that the needs of children are met through the provision of child care programs and facilities. Such programs and facilities must provide for the variety of ages and interests of children throughout the county.

Currently in the county, there is an imbalance between the location of facilities and where potential users wish to have them. Users of child care services have an expectation as to the quality of those services which may not be matched by individual child care operator's performances. Additionally, the issue of affordability of services is important to a substantial portion of the county's population requiring such services, because it can provide limitations on the child care services available to them. When these issues are coupled with the difficulty of locating child care services within residential areas and with the anticipated growth and development of the county, the need for a child care program becomes apparent.

Goals

- 7-AV. To assist and encourage the development of adequate, affordable and quality child care in Contra Costa County.
- 7-AW. To maximize parental choice for child care options in the community.

Policies

- 7-143. The development of high quality child care and preschool facilities shall be encouraged in appropriate locations, especially in conjunction with schools, church facilities and centers of concentrated employment such as business parks.
- 7-144. Child care and preschool facilities shall be consistent with residential and commercial land use designations where safe vehicular access and effective buffering of neighboring residences can be achieved.

- 7-145. Proposed development projects shall be required to provide for child care and preschool facilities in accordance with the General Plan and applicable ordinances, when significant demand for these facilities is created by the projects.
- 7-146. Proposed commercial and residential projects which do not directly provide child care or preschool facilities shall be required to ~~pay an impact fee to support development of these facilities in accordance with the General Plan and applicable ordinances~~ comply with the provisions of the adopted child care ordinance.
- 7-147. In order to increase parental choice, the location of child care facilities shall be encouraged in residential neighborhoods, employment centers, at school sites, hospitals, religious facilities, parks and along transit routes.
- 7-148. Temporary child care facilities should be allowed as a management tool for the efficient and timely development of permanent facilities.
- 7-149. The County shall encourage and participate in efforts to coordinate child care programs and fund raising efforts to meet child care needs throughout the County, through the establishment of the countywide child care organization, as recommended by the Child Care Task Force.
- 7-150. The County shall foster public awareness of the variety of needs and availability of resources for child care.
- 7-151. The County shall review and amend child care regulations and the permitting process in order to simplify them, minimize fees and shorten the approval process.
- 7-152. The County shall encourage parents, providers, public officials and employers to participate in the planning and decision making processes related to providing child care facilities.

Implementation Measures

- 7-ck. Support programs which foster public awareness of the variety of needs and availability of resources for child care.
- 7-cl. Review the County Zoning Ordinance and other ordinances to ensure that requirements for child care and preschool facilities, churches, and other similar land uses are consistent with the policies above.

Other Public Facilities

The provision of governmental services requires a broad range of governmental facilities, beyond those already discussed, to serve the needs of the County. Uses range from civic centers, governmental offices, post offices, libraries, hospitals, detention facilities, to corporation yards and meeting halls.

Since it may be impractical to designate specific locations for such facilities in advance of land acquisition on the Land Use Element Plan map, it is necessary to allow such uses throughout the county without regard to underlying General Plan designation. Later plan amendments will redesignate these sites to the Public/Semi-Public category. They can also be constructed without regard to the underlying zoning.

Most facilities are provided in response to perceived needs and don't have specific standards associated with them. For libraries, standards are known and specified in the policies section below.

Goals

- 7-AX. To assure that high quality civic, medical, and other community facilities are provided to meet the broad range of needs within unincorporated areas of the county.

Policies

- 7-153. The needs of existing and future residents of the county for public assembly and meeting space shall be evaluated. The availability of adequate public space shall be assured through coordinated actions of existing service providers.
- 7-154. When developing new general purpose public facilities, a balance between social, cultural, and recreational needs of the community being served shall be sought.
- 7-155. The following standards should be adopted to further the objective of bringing the County's library system into conformance with average levels of service in the region and in the State:
 - o 50-60 hours of library service per week;
 - o two books per capita; and
 - o $\frac{1}{2}$ square foot of library facility space per capita.
- 7-156. Services provide by the County Library System shall be maintained and improved by providing adequate funding for ongoing operations, and by providing new library facilities to meet the needs of county residents, particularly in growing areas where library service standards are not being met.
- 7-157. Sites of public institutions shall be developed in a manner which buffers the public use impacts from the adjacent lands uses to the extent feasible.
- 7-158. The development of facilities and services to serve the needs of the elderly within the community shall be encouraged.

- 7-159. Churches and other religious institutions shall be considered consistent with residential and commercial land use designations where safe vehicular access and effective buffering of neighboring residences can be achieved.

Implementation

Development Review Process

- 7-cm. Utilize the Mandatory Referral process (Section 65402 of the Government Code) to determine if public land acquisitions, sale or building of new structures, are in conformity with the General Plan.
- 7-cn. Pursue a full range of fiscal methods to finance needed public facilities.
- 7-co. Where appropriate, encourage the establishment of specialized on-site libraries in business parks and other types of development.

VIII. OPEN SPACE/CONSERVATION ELEMENT

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CHAPTER VIII

OPEN SPACE/CONSERVATION ELEMENT

Authority and Purpose

This chapter of the Contra Costa County General Plan encompasses many diverse issues dealing with the identification, preservation and management of natural resources and open space areas in the County. The chapter actually covers the issues required to be addressed by two separate elements under State General Plan laws.

The legal requirements for the Open Space Element and the Conservation Element are included in Sections 65560 et. seq. and 65302 (d) of the California Government Code. The Open Space Element is a plan for the comprehensive and long range preservation and conservation of "open space land." "Open space land" is defined in the statutes as any area of land or water which is essentially unimproved and devoted to an open space use and which is designated on a local, regional or state open space plan as open space for the preservation of natural resources, the managed production of resources, outdoor recreation, or for public health and safety.

In adopting the requirement that all jurisdictions must prepare an Open Space Element, the Legislature found that the preservation of open space land is necessary not only for the maintenance of the economy of the state, but also for the assurance of the continued availability of land for the production of food and fiber, for the enjoyment of scenic beauty, for recreation and for the use of natural resources. The legislature further found that discouraging premature and unnecessary conversion of open space land to urban uses is a matter of public interest which will discourage noncontiguous development patterns which will unnecessarily increase the costs of community services to community residents. Finally, the legislature found that the anticipated increase in the population of the state demands that cities, counties, and the state at the earliest possible date make plans for the preservation of valuable open space land and take positive action to carry out such plans by the adoption and strict administration of laws, ordinances, rules and regulations.

Next to the Land Use Element, the Open Space Element is the broadest in scope. Consequently, the issues required to be covered in the element overlap the issues that are required in other elements such as Conservation and Safety. In particular, the Conservation Element is required to address very broad issues defined as "the conservation, development, and utilization of natural resources including waters, harbors, fisheries, wildlife, minerals, and other natural resources." (Section 65302(d)). Because the issues covered in the Conservation Element directly overlap those required in the Open Space Element, Contra Costa County has opted to combine the two element into one chapter of the General Plan.

It should be noted, however, that the goals, policies and programs for the establishment and maintenance of park facilities and trails are included in the Public Facilities/Services Element.

As in the case of all other elements of the General Plan, the Open Space/Conservation Element has equal legal status with all other sections of the plan.

With reference to the Land Use Element Map, the following map designations and their respective map symbols are considered to be open space designations within the definition contained in the state statute:

- o Open Space (OS)
- o Parks and Recreation (PR)
- o Agricultural Lands (AL)
- o Agricultural Core (AC)
- o Delta Recreation (DR)
- o Watershed (WS)
- o Water (WA)

Overall Goals and Policies Regarding Resource Conservation

Introduction

Contra Costa County is blessed with a wide variety of natural and cultural resources. While many people think of natural resources as open space areas such as woods, mountains, lakes, streams, wetlands, and agricultural land, other resources are equally important. In Contra Costa County, there are important historic and archeologic sites which qualify as resources which should be preserved. The natural environment also includes wind energy resources, which can be managed and tapped to produce electricity; mineral resources, which are used by the home construction and other industries; and oil and gas resources.

The following goals and policies are overall statements regarding the need to preserve and efficiently manage open space and other resources in the county. More detailed policies particular to each type of resource are then discussed under separate topic sections in the remainder of the element.

Overall Open Space/Conservation Goals

- 8-A. To preserve and protect the ecological resources of the County.
- 8-B. To conserve the open space and natural resources of the county through control of the direction, extent and timing of urban growth.
- 8-C. To achieve a balance of uses of the county's natural resources to meet the social and economic needs of the county's residents.

Overall Open Space/Conservation Policies

- 8-1 Permanent open space shall be provided within the county for a variety of open space uses.
- 8-2. Resource utilization and development shall be planned within a framework of maintaining a healthy and attractive environment.

- 8-3. Areas that are highly suited to agricultural production shall be reserved for agriculture.
- 8-4. Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.
- 8-5. Areas designated for open space/agricultural uses shall not be considered as a reserve for urban uses.
- 8-6. Where feasible and desirable, major open space components shall be combined and linked to form a visual and physical system in the county.
- 8-7. The visual identities of urban communities shall be preserved through the maintenance of existing open space areas between cities and/or communities.
- 8-8. In order to reduce adverse impacts on agricultural and environmental values, and to reduce urban costs to taxpayers, scattered development in outlying areas shall be minimized.
- 8-9. Open space acquisition shall be planned and funded, in concert with the region's staged transportation and water and sewage plant and programs.
- 8-10. Open space shall be utilized for public safety, resource conservation and appropriate recreation activities for all segments of the community.
- 8-11. Development plan reviews and project Environmental Impact Reports shall include assessments of the open space needs of the county, as well as those which relate specifically to a proposal.

Vegetation and Wildlife

Introduction

The county has a diverse range of habitats and unique species. It is fortunate that so much of the natural environment remains while substantial areas have already received permanent public protection. There are additional resources which warrant similar public control. The vast majority of privately held lands supporting vegetation and wildlife resources are found within the agricultural areas of the county. Agriculturalists and biological habitats have coexisted for decades in the county; substantial resources have been privately preserved, with great public benefit.

The topographic variety of the county, from the summit of Mount Diablo to the San Francisco Bay/Delta estuary complex, combines to form the setting for the range of habitat and wildlife found here.

In addition to the naturally occurring habitats in the county, suburban communities attract their own assemblage of wildlife. In these areas the lush shrub and tree plantings of backyard gardens seem to function well as a partial substitute for natural scrub and woodland habitats. The most often cited example of suburban wildlife is the Columbian black-tailed deer who frequent suburban gardens and yards. The suburban garden is often the most crucial factor for deer survival during the late summer and early fall months.

There are unique biotic resources found within Contra Costa County which have biological and wildlife importance. While most of the significant habitat areas are found in unincorporated locations, there are several important wildlife areas within city limits. One of the most important resources are wetlands, especially marshes, scattered along the county's shoreline, which have been awarded substantial legal and policy protections.

The following statements shall guide county elected and appointed officials in making decisions which may affect the ecological resources of Contra Costa County. Note that not all of the biotic areas within the County are discussed here. Goals, policies, and implementation measures regarding riparian corridors (vegetation and wildlife along creeks and streams) is included in a later section of this element, "Urban and Rural Creeks."

Goals

- 8-D. To protect ecologically significant lands, marshes, plant and wildlife habitats.
- 8-E. To protect rare and threatened species of fish, wildlife and plant communities, and of other resources which stand out as unique because of their scarcity, scientific value, aesthetic quality or cultural significance.
- 8-F. To encourage the preservation and restoration of the natural characteristics of the San Francisco Bay/Delta estuary and adjacent lands, and recognize the role of Bay vegetation and water area in maintaining favorable climate, air and water quality.

Policies

- 8-12. Significant trees, natural vegetation, and wildlife populations shall be preserved and enhanced.
- 8-13. Important wildlife habitats which would be disturbed by major development shall be preserved, and corridors for wildlife circulation shall be retained.
- 8-14. Significant ecological resource areas in the county shall be identified and designated for low intensity land uses. Setback zones shall be established around the resource areas which assist in their protection.

- 8-15. Areas determined to contain significant ecological resources, particularly those containing endangered species, shall be maintained in their natural state, and carefully regulated to the maximum legal extent. The County shall encourage appropriate public agencies to acquire the most ecologically sensitive properties.
- 8-16. Any development located within significant ecological resource areas shall ensure that the resource is protected.
- 8-17. The County shall utilize performance criteria and standards which seek to regulate uses in or adjacent to significant ecological resource areas.
- 8-18. Natural woodlands shall be preserved to the maximum extent possible in the course of land development.
- 8-19. The critical ecological and scenic characteristics of rangelands, woodlands, and wildlands shall be recognized and protected.
- 8-20. Development on hillsides shall be limited to maintain valuable natural vegetation, especially forests and open grasslands.
- 8-21. Existing vegetation, both native and non-native, and wildlife habitat areas shall be retained in the major open space areas sufficient for the maintenance of a healthy balance of wildlife populations.
- 8-22. Fisheries in the streams within the county shall be preserved and re-established wherever possible.
- 8-23. The ecological value of wetland areas, especially the salt marshes and tidelands of the Bay and Delta, shall be recognized. Existing marshes in the county shall be identified, strictly regulated and protected from any urban development. Whenever possible, the restoration of degraded wetland areas, especially along the Bay, shall be strongly encouraged and supported.
- 8-24. The filling and dredging of lagoons, estuaries, and bays which eliminate marshes and mud flats shall be allowed only for projects which will provide substantial public benefits and for which there are not reasonable alternatives, consistent with state and federal laws.
- 8-25. The County shall actively oppose any and all efforts to construct a peripheral canal or any other water diversion system that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would, in fact, protect, preserve and enhance the San Francisco Bay Delta estuary system.
- 8-26. Fish, shellfish, and waterfowl management shall be considered the appropriate land use for marshes and tidelands, with recreation being allowed as a secondary use in limited locations, consistent with the marshland and tideland preservation policies of the General Plan.

- 8-27. The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and insure that a maximum number and variety of well-adapted plants are sustained in urban areas.
- 8-28. Applications of toxic pesticides and herbicides shall be kept at a minimum and applied in accordance with the strictest standards designed to conserve all the living resources of the county. The use of biological and other non-toxic controls shall be encouraged.

Maps and Inventory of Significant Ecological Resource Areas

The most significant ecological resource areas in Contra Costa County may be defined in three separate categories: (1) areas containing rare and endangered species; (2) unique natural areas; and (3) wetlands and marshes.

These three categories overlap somewhat, since some of the most significant and unique biological resource areas in Contra Costa County also include habitats for rare and endangered animal or plant species. The most important unique natural areas, habitats of rare and endangered species, and wetland areas in the county are inventoried and briefly described in Table VIII-1. The generalized locations of each area are shown on Figure VIII-1. The Community Development Department maintains more detailed maps of these areas in their offices.

The specific animal and plant species that have been designated as "rare," "endangered," or "threatened" by either the State of California or the Federal government are listed in Table VIII-2. Information regarding the known and inferred habitats for these rare and endangered species is included in Figure VIII-1.

An "endangered species" is one which is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is one which is likely to become an endangered species within the foreseeable future. In 1986 California dropped the "rare" designation in favor of the term "threatened" when referring to animal species. However, the State has retained the term "rare" to define plant species which may soon become threatened if their habitat situation worsens.

In 1970 California instituted a program for the protection of endangered and threatened species based on the federal government's program. In 1984 the California legislature adopted the California Endangered Species Act which replaced the 1970 program. Both the federal and state legislation protects all of the listed plant and animal species and their habitats.

When threatened or endangered species are found by qualified field biologists to occur on a proposed development or altered land use area, the protected species in question and its habitat must be left untouched. In most cases buffer zones must be left around the defined habitat edge to insure against future intrusion. The 1984 Act also requires local governments to consider whether a proposed development is appropriate to coexist with a protected species, or if the proposed development would create an island around the species' habitat preventing future expansion of its population.

Table VIII-1

Inventory of Significant
Ecological Resource Areas

1. Point Pinole

Tidal marsh, mudflat, grassland and plantation (eucalyptus) habitats. Valuable for migrating waterfowl and shorebirds. Habitat for endangered California clapper rail and salt marsh harvest mouse, possibly for black rail, and for the depleted Samuel's song sparrow and white-tailed kite. Plantation serves as resting place for migrating monarch butterflies.

2. San Pablo Creek and Wildcat Creek Marshes

Tidal marsh and mudflat habitats. Habitat for the same endangered and depleted species as at Point Pinole.

3. Brooks Island

Tidal marsh, scrub/brushland and native coastal prairie grassland habitats. Important stop for migrating waterfowl including Canada goose. Supports a population of California vole with a rare pelage (hair) color mutant.

4. Hoffman Marsh

Tidal marsh habitat for migrating waterfowl and shorebirds, possibly for endangered California clapper rail and salt marsh harvest mouse.

5. San Pablo Ridge

The grassland areas on clay and clay loam soils on the ridge support small populations of the endangered Santa Cruz Tarweed.

6. Wildcat Creek Canyon

Riparian woodland habitat near urban area. Habitat for depleted ornate shrew, western pond turtle, northern brown skink and possibly for rare Alameda striped racer.

7. Lone Tree Point

Stratified cliff face demonstrates the underlying trend of coastal uplift. Fossiliferous strata contain many marine-life fossils such as clams and oysters.

8. Sobrante Ridge Manzanita Grove

A unique "island" stand of chaparral that supports two and possibly three species of manzanita, one of which is rare (Alameda manzanita).

Table VIII-1

Inventory of Significant
Ecological Resource Areas
(con.)

9. Siesta Valley

Broadleaf evergreen forest, riparian woodland, grassland and scrub/brushland habitats. Habitat for rare Alameda striped racer and depleted Berkeley kangaroo rat, northern brown skink, grasshopper sparrow and orante shrew. Easily observed geologic features include a faulted syncline with Siesta Formation outcropping in the fold and Moraga basalt forming the upper slopes of the valley. Some fossil shells and land mammals.

10. Huckleberry Botanic Preserve

Extraordinarily rich habitats of chaparral and broadleaf evergreen forest. Supports rare and/or endangered Alameda manzanita and leatherwood and diverse avifauna.

11. Redwood Forest

Fine example of coast redwood forest. Redwoods were extensively logged in the late 1800's; all existing trees are second growth.

12. Flicker Ridge

Concentration of many habitats: grassland, native grassland, scrub/brushland, chaparral, open oak woodland, broadleaf evergreen forest, knobcone pine forest and agriculture. Includes patches of unique pigmy redwoods, stunted due largely to exposure and soil conditions.

13. Briones Hills

Large areas of diverse habitats. Supports rare, endangered or depleted California tiger salamander, western pond turtle, northern brown skink, ornate shrew, prairie falcon, mountain lion and possibly Alameda striped racer, grasshopper sparrow, golden eagle, badger, ringtail and bobcat. One rare plant, Mt. Diablo fairy lantern, is known to occur here, and another, Diablo helianthella, is suspected to occur.

14. Martinez Waterfront and Concord Naval Weapons Station

Tidal marsh habitat. Supports rare salt marsh harvest mouse, California clapper rail and possibly black rail. The depleted ornate shrew, white-tailed kite and Suisun song sparrow also occur here.

15. Lime Ridge

Supports the endangered plant, Mt. Diablo manzanita, and a buckwheat subspecies which occurs only on Lime Ridge.

Table VIII-1

Inventory of Significant
Ecological Resource Areas
(con.)

16. Shell Ridge

Open oak woodland and grassland habitats. Upturned geologic strata contain many marine fossils.

17. Las Trampas and Rocky Ridges

Large "wilderness" area of rugged terrain, high ridges and steep slopes. Varied habitats include grassland, scrub/brushland, chaparral, rock outcrops, open oak woodland, broadleaf evergreen forest, and riparian woodland. Habitat for rare, endangered or depleted Alameda striped racer, black-chinned sparrow, prairie falcon, golden eagle, ringtail, badger, bobcat and mountain lion.

18. Blackhawk Ranch Fossil Locality

Upturned fossiliferous Pliocene strata indicates past climate, flora and fauna. Diverse fossils include those of streamside trees, marine invertebrates, lizards, cranes, small mammals, carnivores, peccaries, camels, horses and mastodons. Site was the edge of a salt water basin that extended inland to the Sierra Nevada.

19. Mt. Diablo

Diverse habitats including the native grassland, serpentine chaparral, large rock outcrops, riparian woodland, dwarfed woodland, Coulter pine forest, knobcone pine forest, and springs. At least thirteen rare and/or endangered plants and many rare, endangered or depleted animals, including an isolated population of northern sagebrush lizard, inhabit the mountain.

20. Nortonville - Somersville

Northernmost limit of Coulter pine and black sage, southernmost limit of common manzanita. Three rare and/or endangered plants occur here (Mt. Diablo manzanita, Diablo helianthella and Brewer dwarf flax). Habitats include grassland, chaparral, open oak woodland and Coulter pine forest. Area has been heavily mined for coal.

21. West Pittsburg Salt Marsh

This marsh area is a habitat for the endangered salt marsh harvest mouse and the California black rail.

22. Entrapment Zone between Honker Bay and Antioch

This area consists of the channel network connecting the San Joaquin and Sacramento Rivers. This is a highly biologically-productive deep water habitat where suspended organics and nutrients tend to accumulate, providing an essential habitat for plankton, which forms the base of the Delta food web.

Table VIII-1

Inventory of Significant
Ecological Resource Areas
(con.)

23. Browns Island - Winter Island

Excellent example of estuarine habitat. Significant freshwater marsh areas with a mixture of fresh and salt waters. Habitat for depleted Suisun song sparrow, white-tailed kite and possibly river otter. Rare black rail might also occur here.

24. Mouth of Contra Costa Canal

Salt water marsh provides habitat for the Black shouldered kite.

25. Antioch Sand Dunes

Small and only remaining remnants of riverine dunes, once part of the largest river-laid dunes in the state that stretched ten miles along the southern shore of the San Joaquin River. The remaining threatened dunes support three rare and/or endangered plants, at least six endangered or endemic insects and the endangered California legless lizard.

26. Los Vaqueros

This area contains fair densities of Valley Needlegrass grassland interspersed with typical coast range animals.

27. Big Break

This is an emergent marsh habitat supporting the rare California black rail.

28. Marsh Creek Riparian Corridor and Marsh Creek Reservoir

These areas provide habitat for a variety of sensitive plant and animal species including: large-flowered fiddleneck, Hoover cryptantha, Mt. Diablo buckwheat, diamond-petaled California poppy, stink bells, Diablo rock-rose, caper fruited tropiclocarpum, San Joaquin kit fox, California Tiger Salamander, California Red-legged Frog and Molestan Blister Beetle.

29. Alkali Meadows and Northern Claypan Vernal Pools

A significant natural community considered extremely rare by the Department of Fish and Game's (DFG) Natural Diversity Data Base (NDDB). Some *Allenrolfia occidentalis* are found in the area. The Northern Claypan Vernal Pools are extremely rare statewide. A specialized flora and invertebrate fauna are adapted to this unique habitat.

30. Los Vaqueros

Area of biological importance because of the presence of a historical eagles nest and other outstanding natural features. This area provides habitat for the following special status species: San Joaquin kit fox,

Table VIII-1

Inventory of Significant Ecological Resource Areas (con.)

Alameda striped racer, tricolored blackbird, California Red-legged Frog, California tiger Salamander, Western Pond Turtle, Freshwater shrimp. Also contains Alkali Meadows and Northern Claypan Vernal Pools, both of which are considered to be rare statewide.

31. Bethel Island Wetlands

Significant wetland values. The Bethel Island planning area supports approximately 741.5 acres of seasonal and permanent wetlands. Another approximately 940 acres of ruderal wetland/upland are found on the planning area. These have high values as biological habitat and are considered critical natural resources by the U.S. Army Corps of Engineers and other resource agencies.

32. Little Franks Tract

This freshwater marsh habitat contains riparian shrub-brush along the levees which supports the Black-crowned night heron.

33. Franks Tract

A flooded, formerly levee-encircled delta island. Freshwater marsh and riparian woodland habitats on borders, delta aquatic habitat within a good spawning area for fish (striped bass, largemouth bass, white catfish, others). Possible habitat for the rare giant garter snake.

34. Sand Mound Slough

This area is an example of habitat found on the tule islands in the central and southern Delta. This area contains tules, bulrushes, common reed, rushes and other marsh vegetation as well as riparian vegetation which provides a valuable habitat for wintering ducks and other waterfowl.

35. Connection Slough, Quimby Island, Rhode Island, Old River Complex

A diverse mix of upland habitat, agricultural lands, riparian trees and shrub-brush, marsh and tule islands. Excellent wildlife habitat, particularly for raptorial birds, songbirds, and game species. These areas support the rare California Hibiscus.

36. South Bank of Rock Slough

This area supports a small population of the Suisun Marsh Aster and California Hibiscus.

Table VIII-1

Inventory of Significant Ecological Resource Areas (con.)

37. Indian Slough

The California Hibiscus is found at the confluence of Indian Slough.

38. Byron Hot Springs

Alkali mud flats, salt marsh and hot mineral springs. A rare snail (Helminthoglypta contra costae) inhabits the area. The site of an old resort-spa now in disrepair. A recently created shallow lake has enhanced the habitat for wildlife. The grassland hills to the west support the rare and endangered San Joaquin kit fox.

39. Eucalyptus Island

A freshwater marsh subject to tidal fluctuation. This area supports a variety of wildlife and is the habitat of the California Hibiscus.

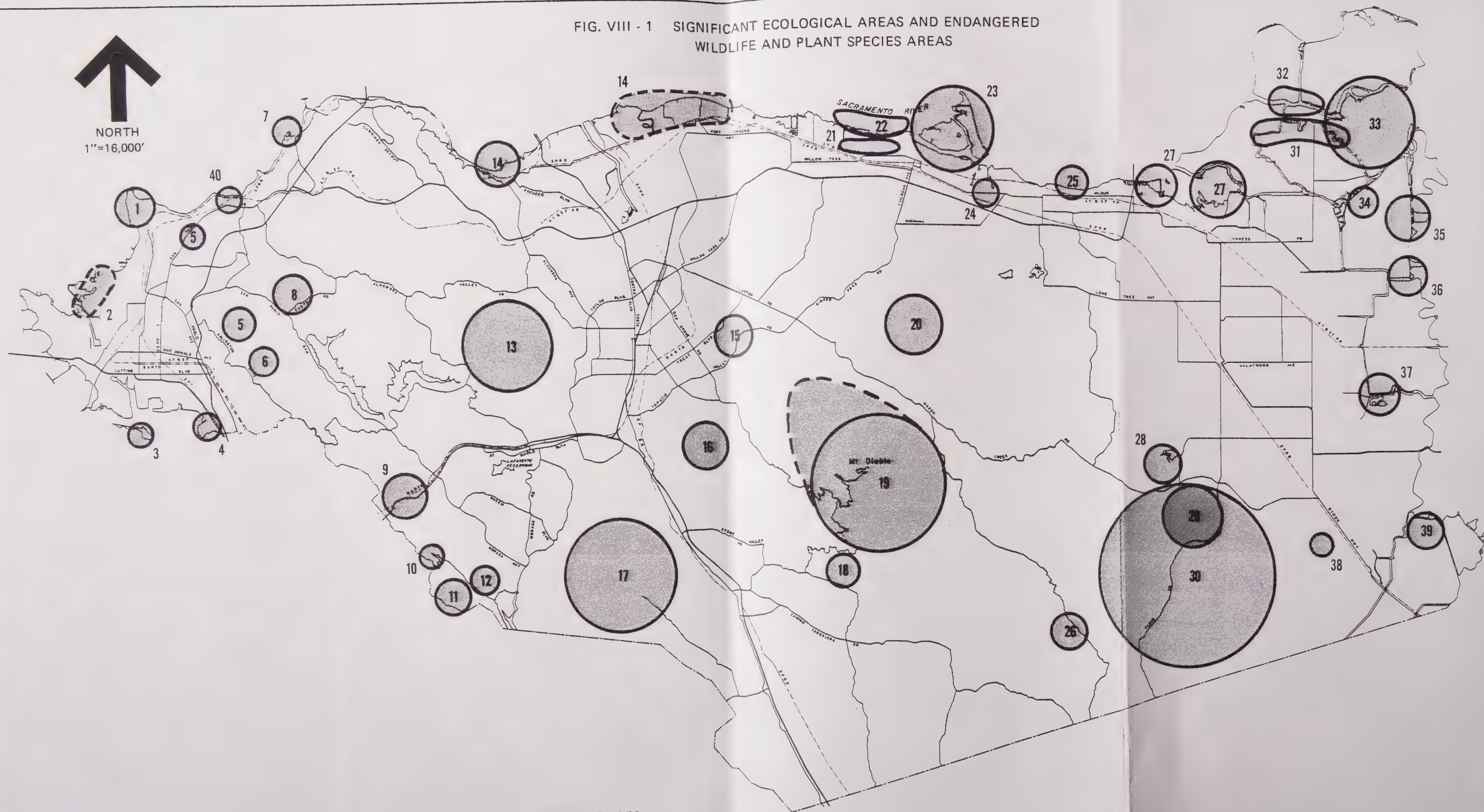
40. Mouth of Pinole Creek

This coastal salt marsh area supports the California black rail.

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1. Armstrong, Dean and Barbara Kautz, 1973, Environmental Analysis of Western Contra Costa County; Tri-Cities Seismic Safety and Environmental Resources Study. Cities of El Cerrito, Richmond and San Pablo.
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3. Darwin Myers Associates, 1988, "Sensitive Taxa Assessment Marsh Creek Reservoir," Contra Costa County.
4. Jones and Stokes Associates, 1986, "Final Stage 1 Environmental Impact Report for Los Vaqueros/Kellogg Project," Contra Costa Water District.
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FIG. VIII - 1 SIGNIFICANT ECOLOGICAL AREAS AND ENDANGERED WILDLIFE AND PLANT SPECIES AREAS



FOR MAP KEY SEE FIG. VIII - 1 NOTES* ON THE FOLLOWING PAGES

TABLE VIII-2

RARE/ENDANGERED PLANTS

Name	Scientific Name	Location	Status
Contra Costa Wall-flower	<i>Erysimum capitatum</i>	Antioch Dunes	very rare/endangered
Masons Lilaeopsis	<i>Lilaeopsis Masonii</i>	Antioch Dunes Suisun Bay Frank's Track	rare
Antioch Dunes Evening Primrose	<i>Oenothera Deltoides</i> var. <i>Howellii</i>	Antioch Dunes Browns Island	very rare/endangered
Large Flowered Fiddleneck	<i>Amsinckia Grandiflora</i>	Antioch south	endangered
Mt. Diablo Manzanita	<i>Arctostaphylos Auriculata</i>	Mt. Diablo Region Alamo Canyon	rare
Soft Birds Beak	<i>Cordylanthus Mollis</i> ssp <i>Mollis</i>	Salt Marshes near Martinez Mare Island	rare
California Hibiscus	<i>Hibiscus Californicus</i>	Bouldin Island	rare
Alameda Manzanita	<i>Arctostaphylos Pallida</i>	Briones Valley Oakland Hills Sobrante Ridge	very rare/endangered
Santa Cruz Tarweed	<i>Holocarpha Macradenia</i>	San Pablo Resv. Pinole	very rare/endangered

Name	Scientific Name	Location	Status
Diamond Petaled California Poppy	Eschschol Tzia Rhombipetala	Antioch Hills south of Byron	rare
Diablo Rock Rose	Helianthella Castanea	Mt. Diablo Los Vaqueros res. site Las Trampas Ridge	rare
Caper Fruited Tropidocarpum	Tropidocarpum Capparideum	Byron Hot Springs	rare
Procumbent Cordylanthus	Cordylanthus Nidularius	Mt. Diablo State Game Refuge	rare
Rock Sanicle	Sanicula Saxatilis	Mt. Diablo State Park	rare
Mt. Diablo Jewel Flower	Streptanthus Hispidus	Mt. Diablo	rare
Suisun Marsh Aster	Aster Chilensis var. lentus	Browns Island Woodward Island	very rare
Brewers Dwarf Flax	Hesperolinon Breweri	Marsh Creek area of Mt. Diablo Mareley Canyon	rare
Contra Costa Goldfields	Lasthenia conjugens	Antioch Byron Springs	rare
Delta Tule Pea	Lathyrus Jepsonii ssp Jepsonii	Browns Island Martinez Marina	rare

Name	Scientific Name	Location	Status
Bay Checkerspot	Euphydryas Editha Rayensis	Morgan Territory Road Antioch	rare
Eriogonum Truncatum	Eriogonum Truncatum	Marsh Creek Rd. 10 mi. from Clayton Mt. Diablo	rare

RARE/ENDANGERED ANIMALS

Name	Scientific Name	Location	Status
Lange's metalmark butterfly	Apodemia mormo langei	Antioch Dunes	endangered
Salt Marsh Harvest Mouse	Reithrodontomys raviventris	Suisun Bay northern San Pablo Bay marshes	endangered
Alameda striped racer	Masticophis lateralis euryxanthus	Antioch south Briones Valley Mt. Diablo Alamo	threatened
Berkeley kangaroo rat	Dipodomys heermanni bekeleyensis	Briones Valley Berkeley Hills Mt. Diablo	depleted
California tiger salamander	Ambystoma tigrinum californiense	Marsh Creek Byron Hot Springs	depleted
San Joaquin kit fox	Vulpes macrotis mutica	Byron Hot Springs	endangered/threatened
California Black Rail	Laterallus jamaicensis	Honker Bay Marsh areas in Richmond Pinole Port Chicago and Wildcat Creek	threatened
Suisun song sparrow	Melospiza melodia maxillaris	Suisun Bay Port Chicago	endangered

Name	Scientific Name	Location	Status
California least tern	<i>Sterna antillarum browni</i>	Avon to Port Chicago marsh	endangered
California clapper rail	<i>Rallus longirostris obsoletus</i>	Coastal salt marshes	endangered
Salt marsh wandering shrew	<i>Sorex vagrans halicoetes</i>	Giant Marsh San Pablo Creek and Salt Marshes	locally depleted
Black shouldered kite	<i>Elanus caeruleus</i>	Wildcat Creek marsh Antioch north	fully protected
San Joaquin dune beetle	<i>Coelus gracilis</i>	Antioch Dunes	extinct
San Joaquin Pocket mouse	<i>Perognathus inornatus</i>	WSW Antioch	rare
San Francisco tree lupine moth	<i>Grapholita edwardsjana</i>	Inspiration Pt. Tilden Park	rare
Tule Elk	<i>Cervus elephus nannodes</i>	Concord Naval Weapons Station	rare
San Pablo vole	<i>Microtus californicus san pabloensis</i>	Giant salt marsh	rare
Short eared owl	<i>Asio flammeus</i>	Wildcat Creek marsh	rare
Northern Harrier	<i>Circus cyaneus</i>	Wildcat Creek marsh	rare

As part of the General Plan review, the county's biotic resource maps have been revised to reflect the most current sightings of endangered, threatened and rare species as inventoried by the Department of Fish and Game Natural Diversity Data Base. This information can be used when reviewing development plans to determine the presence of an endangered, rare or threatened plant and/or animal species on a project site.

Some of the unique habitat areas that support federal or State designated endangered species are already protected by public agencies (e.g. Mt. Diablo State Park and the Antioch Dunes), although many key areas remain under private ownership.

One area that has recently been identified as containing a unique habitat is the Vasco Caves area in the rural southeastern corner of the County. Specialized ecosystems appear to exist in the area which are worthy of preservation through either public or private efforts. The acquisition of lands in the area by the County for the East Contra Costa Airport, and of watershed lands by the Contra Costa Water District, may also aid in the permanent protection of some of these resources. To facilitate a better understanding of the unique archeological and natural resources in the Southeast County area a detailed inventory should be prepared. Efforts to secure financing for such an effort should be explored upon adoption of this plan.

Private landowners of ecologically significant areas identified in Figure VIII-2 that apply for subdivision or other land use permits shall provide information to the County on the nature and extent of the biotic resources that exist in the area. The County Planning Agency shall be responsible for determining the balance between the multiple use of the land and the protection of resources. The cumulative impacts on the natural resources from other rural uses such as agriculture, mining, or wind energy, must be examined and addressed as part of the review of applications. Both public and private stewardship of the resources within unique natural areas shall be considered as long as the protection is long term and guaranteed in some manner. Due to the fragile nature of some of these resources, however, public access to the areas should be limited or restricted.

Implementation Measures

Significant Ecological Resource Inventory

- 8-a. Prepare a detailed inventory of ecologically significant areas which include unique natural areas, habitats of rare and endangered species, and wetland and marsh areas. The inventory shall be mapped as an overlay to the existing Resource Mapping System and shall include buffer zones around the identified resource areas in order to take into account for periodic, seasonal, or ecological changes. The maps shall be revised on a regular basis to reflect the availability of new information from other agencies, changes in definition, or any other changes.
- 8-b. Update and maintain a list of State and federal endangered species ~~xxx~~ which may be impacted by development in the County.

- 8-c. In cooperation with other public and private agencies, prepare a detailed inventory of biological and archeological resources in the Southeast County area, to be used in project review.

Development Review Process

- 8-d. Update and maintain detailed maps of the significant ecological resource areas described in (a) above and use them in the environmental review process to determine potential impacts upon these resources.
- 8-e. Prior to the approval of discretionary permits involving unincorporated parcels within or immediately adjacent to any significant ecological resource area, the county shall require the preparation of a biotic resources evaluation which evaluates the impacts of the project on the resource and lists appropriate mitigation measures, including an appropriate building setback. Approve no subdivision map or permit which does not include appropriate mitigation measures to protect the resource.
- 8-f. Prior to the approval of a discretionary permit on a parcel containing a rare or endangered plant or animal species, require a biotic resources evaluation as outlined in (e) above. The assessment shall be based upon a field reconnaissance taken at the appropriate time of year to determine whether a species is found on the property. Mitigation measures shall be developed in consultation with appropriate agencies, shall comply with the provisions with the Endangered Species Act of 1973, and shall be attached as conditions of approval. Adequate bonding shall be required of the project proponent to insure execution and satisfactory completion of the measures.
- 8-g. Prepare a list of standard mitigation measures which should apply to projects which are approved in or adjacent to significant ecological resource areas.

Wetland Areas

- 8-h. A minimum setback of 50 feet from the edge of any designated marsh or wetlands area shall be required for any new structure. Expansions or other modifications of agriculturally-related structures existing as of 1983 shall be exempt from this setback requirement. Parcels which would be rendered unbuildable by application of this standard shall also be exempt.
- 8-i. Permit minor land-fill or other land reclamation for water-related uses if no alternative site is available and if public benefits clearly exceed public detriments from the loss of open water or tidelands areas.
- 8-j. Review development permit applications to ensure that there is zero net loss of wetland areas in the county in return for use of existing wetlands.

Zoning Ordinance Revisions

- 8-k. Amend the County Zoning Ordinance to include a "Significant Ecological Resources Area" combining district. Apply the district to all properties mapped within a significant ecological resource area as defined in (a) above. Include in the regulations of the combining district the provisions of (d), (e), (f), (g), and (h) above. Also include in the provisions of the combining district performance criteria and standards which shall apply to projects within the district.

Other Programs

- 8-l. Cooperate with, encourage and support the plans of appropriate public agencies to acquire privately owned lands in order to provide habitat protection for the maintenance of rare or endangered plant and animal species.
- 8-m. Expand the range of uses ~~Encourage /and/ approve /applications~~ for inclusion of land in the Agricultural Preserve Program ~~as to include~~ "wildlife habitat area", in conformance with the amended Land Conservation Act of 1965, or the Open Space Easements Program.
- 8-n. Encourage the revegetation of lands which have been modified for agriculture, where appropriate.

Agricultural Resources

Introduction

The following section presents some background data on the the relative importance, in terms of economic performance, of the various agricultural sectors in the County. Based upon these indicators, it is clear that agricultural resources in the county represent a significant economic asset.

The dominant trend in local agriculture in Contra Costa County since 1940 has been a significant decrease in the amount of acreage in production. Much of this decline is attributable to the increasing urbanization of the region, a process which over time gradually converts agricultural lands to housing and other urban uses. In Contra Costa County, land in all types of active agricultural uses (cropland and grazing lands) has declined by almost half, from over 400,000 acres in 1940 (or 85% of the County's total land area) to less than 210,000 acres in 1987 (45% of all County lands).

Field crops such as hay, barley and wheat grown in the County have plummeted in acreage by 82% since World War II, while vegetable croplands decreased in acreage by over one-half between 1960 and 1987. In 1960, over 10,000 acres of land in the County was planted in asparagus and 2,900 acres in lettuce. By the 1980's, asparagus was being cultivated on about 2,500 acres each year and virtually no lettuce was being grown.

As Contra Costa County has undergone a dramatic transition from a rural to suburban environment, specialized forms of agriculture such as nursery products have increased their market. The largest nursery crop producers are located in the North Richmond area of West County. Production of specialized nursery crops (bedding plants, cut flowers, house plants, shrubs, and Christmas trees) is now by far the largest income producing agricultural operation in Contra Costa County, amounting to \$20 million in gross receipts in 1987.

The sale of nursery crops now makes up one third of the approximately \$60 million collected each year in agricultural receipts. The largest single crop in terms of sales is bedding plants, which has more than doubled from a \$4 million business in 1980 to \$9.7 million in 1987.

The second largest money-producing agricultural category in Contra Costa County after nursery crops is vegetables. Virtually all of the remaining row crop farms with significant annual sales are located on East County lands adjacent to the Sacramento-San Joaquin River Delta. Although only 31 farms were counted as harvesting vegetables at the time of the last farm census in 1982, the market value of the produce has grown to almost \$14.7 million in 1987.

Tomatoes represent the biggest portion of vegetable sales, about \$9 to \$10 million annually, up from \$7.4 million in 1984. Tomatoes are raised on a dozen East County farms and represent over half of all the cropland used for vegetables. Other important vegetables in the County are asparagus (\$3.2 million in gross receipts in 1987), sweet corn (over \$1 million annually), squash (\$400,000), bell peppers (\$230,000), and beans (\$118,000).

Range and pasture lands, which provide grazing for large farm animals and dry farming of grains for feed, account for a large portion of total agricultural acreage in the County. These lands include all the areas with steep slopes, rugged terrain, a lack of an adequate water supply, or other natural constraints which make the land unsuitable for more intensive agricultural activities.

Raising cattle for sale has traditionally been the third most important agricultural activity, in terms of receipts collected each year, after nursery plants and vegetables. Livestock, poultry, and apiary products accounted for \$11.3 million in receipts in 1987. However, the number of livestock in the County, primarily beef and dairy cattle, has declined from 43,000 head in 1960 to 23,000 head in 1984 to about 17,000 in 1987.

Gross receipts for beef and dairy cattle sales accounted for \$6.7 million in 1987. On the dairy side, milk production is still a significant activity in the County, with three large producers. The volume of milk marketed has grown from 283,000 hundred weight (cwt) in 1960 to 361,000 cwt. in 1970 to about the same amount in 1987, representing over \$4 million annually in receipts.

Farmlands supporting fruit and nut trees have decreased significantly since the years prior to World War II, when orchards dotted the flat valleys of Central County. Land producing fruits and nuts declined by almost 40% between 1940 and 1970, as subdivisions overran the orchards outside Walnut Creek and Concord, and new tree crops were planted on irrigated lands in East County. In 1960, there were almost 4,500 acres of apricot and pear trees; by 1987, that number had dropped to less than 1,500 acres. Wine grapes, once grown on over 5,000 acres, now account for less than 1,000 acres.

Several hundred small and medium-sized orchards remain in the County, on approximately 7,000 acres mainly concentrated in East County. The total production from orchards represents \$7 million in gross sales annually. The most important crops in the fruit and nut category, in terms of acreage, continue to be walnuts and almonds, which account for about 4,000 acres in the County.

The most lucrative orchard crops in Contra Costa County are apricots and walnuts. In 1987, gross receipts from apricots totalled \$1.6 million, followed by \$1.4 million in receipts for English walnuts in the shell. It should be noted, however, that the acreage in walnut orchards has declined by 50% during the 1980's as orchards in East County have gone out of business or have been converted to urban uses. Other significant fruit crops in the County are cherries (\$1,038,000 in 1987) and grapes (\$518,000). Gross receipts for all other fruit and nut crops, including peaches, pears, strawberries, pistachio nuts, etc., amount to about \$2.6 million annually.

Field crops include grains such as corn, hay and silage raised for animals, as well as barley, sugar beets, and wheat. Annual gross receipts totalled approximately \$1.4 million in 1987, down from \$1.9 million the year before.

A recurring problem in agricultural areas is the dilemma of permitting a limited amount land subdivision, without affecting the continued viability of agricultural operations. In Contra Costa County, minor subdivisions of farming properties are often requested so that a member of the family can build an additional home on the property. Banks require collateral for construction loans; few landowners wish to risk the entire holding, or a large portion of it, as security for a construction loan. Minor subdivisions are also requested when a farming family wishes to sell of a small piece of their land in order to make up a shortfall on the remaining operation.

While the limited subdivision of agricultural lands for legitimate reasons must be accommodated by the County, it is apparent that allowing a proliferation of land divisions in a given area will have a disastrous affect on other farmers or ranchers who are trying to remain in business. The proliferation of minor subdivisions has the effect of creating smaller and smaller parcels of land in agricultural areas, with more and more "ranchette" units owned by non-farming families moving into the area and bidding up the price of the land, which in turn drives out the original farmers. Adequate minimum parcel sizes in agricultural zones must be maintained in order to protect the existing farm operations and to discourage urban landowners from building homes in the area.

One opportunity for assisting the farm or ranch operation to remain in business is the concept of "transfer or purchase of development credits" (TDR/PDR). Transfer or purchase of development credits is a method of preserving agricultural and other open space lands by providing the owner with compensation either by providing cash payments for a property's urban development potential or by crediting and transferring this potential to another property. In this way, the agricultural landowner reaps the benefit of agricultural land development potential without the negative effect that construction and occupation of homes on these lands can bring.

During the 1970's and 1980's, the county has seen the growth of "ranchette" style housing. These homes appeal to people with urban incomes who wish to pay extra to live in the more rural, hilly parts of the county and are typically located on large lots (5 acres or more). Many of these property owners are small time farmers, while some of the demand is from residents who own horses and wish to stable them near their homes. Ranchettes are also occupied by retired ranchers or farmers who do not wish to leave the area, but no longer work the land.

The policies of the Contra Costa County Board of Supervisors regarding ranchettes is contained in a 1983 resolution of the Board (No. 83/407) entitled "Rural Residential Development." The policy states that ranchettes created by such parcelization are inappropriate in prime agricultural areas where active cultivation such as row crops or orchards are present. Furthermore, the policy states ranchettes are to be discouraged within city spheres of influence.

This General Plan incorporates the Rural Residential Development policy as it relates to subdivisions of lands planned for agricultural uses. The plan specifically discourages major subdivisions in agricultural areas. However, if major subdivision occurs, the plan requires rezoning of the project area to the Planned Unit Development District, with the property owner required to deed further development rights to the County in order to mitigate the impact of development of the lands.

Goals

- 8-G. To encourage and enhance agriculture, and to maintain and promote a healthy and competitive agricultural economy.
- 8-H. To conserve prime agricultural soils exclusively for agriculture, especially in East County.
- 8-I. To minimize conflicts between agricultural and urban uses.

Policies


Overall Policies

- 8-29. Large contiguous areas of the county should be encouraged to remain in agricultural production, as long as economically viable.
- 8-30. In order to reduce adverse impacts on agricultural and environmental values, and to reduce urban costs to taxpayers, scattered development and major subdivisions in outlying areas shall be discouraged.
- 8-31. Urban development in the future shall take place within areas designated by this plan for urban growth.
- 8-32. Agriculture shall be protected to assure a balance in land use.

- 8-33. Existing policies shall be retained and new policies adopted which identify, protect, and designate prime agricultural lands for agricultural uses as shown on the Land Use Element map.
- 8-34. Land use decisions shall give highest priority to the preservation of prime agricultural soils and shall provide that urban development shall be directed to areas of non-prime soils.
- 8-35. The County shall encourage agriculture to continue operating adjacent to developing urban areas. The County should recognize and support the largest income-producing agricultural operations, specialized nursery and greenhouse crops, and should ensure that such operations are protected as short and long-term uses in urban and rural areas.
- 8-36. Urban developments shall be required to establish effective buffers between them and land planned for agricultural uses.
- 8-37. Residents in or near agricultural area shall be informed and educated regarding the potential nuisances and hazards associated with nearby agricultural practices.
- 8-38. Agriculture shall be protected from nuisance complaints from non-agricultural land uses.
- 8-39. The use of toxic and nutritive chemicals by agricultural operators shall be minimized.
- 8-40. Agricultural operations shall be protected and enhanced through encouragement of Williamson Act contracts to retain designated areas in agricultural use.
- 8-41. A full range of agriculturally-related uses shall be allowed and encouraged in agricultural areas.

Policies Encouraging the Economic Viability of Agriculture

- 8-42. The promotion and marketing of locally grown agricultural products shall be encouraged.
- 8-43. The importance of the agricultural production, processing, and services industry within the county shall be recognized, and agriculture shall be integrated into the County's overall economic development programs.
- 8-44. The physical and service infrastructure, public and private, which supports agriculture shall be promoted.
- 8-45. Agricultural processing and service businesses in agriculturally designated areas may be permitted.
- 8-46. Efforts to assure an adequate, quality, and fairly priced water supply to irrigated agricultural areas shall be supported.



CARQUINEZ STRAITS

SUISUN BAY

SACRAMENTO RIVER

SAN JOAQUIN RIVER

PRIMARYLY GRAZING

PRIMARY
ROW AND TREE CROPS

PRIMARYLY GRAZING

SAN FRANCISCO
BAY

Mt Diablo

PRIMARYLY GRAZING

PROPOSED LOS VAQUEROS RESERVIOR
WATERSHED AQUISITION AREA

IMPORTANT AGRICULTURAL AREAS

**CONTRA COSTA COUNTY
CALIFORNIA**

- 8-47. Maintenance and reconstruction of Delta levees shall be encouraged to assure the continued availability of valuable agricultural land protected by the existing network of levees and related facilities.
- 8-48. The County shall ensure that its fiscal policies and practices provide the maximum lawful protection to owners of agricultural lands.
- 8-49. Farm worker and farm family housing may be permitted in agricultural areas to meet the needs of locally employed transient and permanent farm workers and family farm workers.

Maps and Inventory of Resource Areas

Figure VIII-2 illustrates the most important agricultural lands found in the county. This figure indicates that there are important grazing lands found in the Briones Hills, Bollinger Canyon, Tassajara, and other areas, while the most important orchard and row crops are located in the East County area.

While there are some public lands in the county (e.g. watershed lands owned by the East Bay Municipal Utility District) which allow the grazing of livestock, these lands are not generally included on the Figure VIII-2 map, since grazing is not the primary activity. The use of EBMUD lands, as well as regional or state park lands, for grazing may be discontinued in the future.

The agricultural preservation policies found in this section focus on these remaining important grazing, orchard, and row crop areas in the county.

Implementation Measures

Rural Residential Development

- 8-o. Requests for subdivision of lands designated for agricultural or open space uses shall be reviewed for consistency with this plan according to the following criteria:
 - (1) Ranchettes are deemed to be inappropriate and are to be discouraged in areas of prime agricultural areas (prime soils plus available useable water of a quality suitable for agricultural purposes).
 - (2) Ranchettes are deemed to be inappropriate and are to be discouraged in the existing sphere of influence of cities where such cities have urbanization planned in their sphere of influence (as indicated, for instance, in their general plans or specific plans). Cities should be informed in a timely manner when applications are filed and consulted as to their ultimate plans in the relevant area.
 - (3) Agricultural/Open Space subdivisions are considered a long term, rural residential use of the land. Parcel size shall be a minimum of 5 acres in lands designated Agricultural Lands and 20 Acres in lands designated Delta Recreation.

- (4) Any application for parcels to be separated from a larger parcel or parcels under the same ownership shall indicate on the plan all of the contiguous land held by the applicant.
- (5) Prior to the filing of the Final or Parcel Map the applicant must comply with the following:
 - (a) Each parcel must have an "on site" producing water well or install a "test well" having a minimum yield of three gallons per minute with bacterial and chemical quality in compliance with the state standards for a pure, wholesome and potable water supply (Title 22, Section 64433). If the chemical analysis exceeds the state standards for "maximum contaminant levels" for water potability, a statement must be attached and "run with the deed" advising of these levels; or
 - (b) Have verifiable water availability data from adjacent parcels presented by the applicant, or knowledge of the same, known by the Health Services Department concerning water quality and quantity per (a) above; and,

have a statement that "attaches and runs with the deed" indicating that a water well shall be installed on the subject parcel complying with the general requirements stated above prior to obtaining a Building Inspection Department permit for construction.
 - (c) In addition to the above, a hydro-geological evaluation may be required in known or suspected water short areas. This will include seasonal as well as yearly variations.
 - (d) The purpose for requesting hydro-geological evaluations is to determine the total projected number of dwelling units that can be supplied with drinking water from existing aquifers. The two primary circumstance that would generally require hydrogeological evaluations are:
 - (1) Where a proposed major subdivision contemplating the addition of large numbers of dwelling units on individual wells would substantially increase the density within an existing drainage basin. Hydrogeological data relevant to recharge of aquifers and projected yield would become essential not only to support approval of large major subdivisions under these circumstances, but also to ensure that the water supplies serving existing structures would not be depleted by the proposed increase demand.

- (2) In those cases where density is increasing in particular drainage basins due to the build out of previously approved subdivisions using individual wells for water supplies and existing well yields begin to evidence declines due to the increased demand. In these circumstances, or in water short basins, hydrogeological studies would be appropriate as conditions of approval of subsequent development to provide sufficient yield for proposed uses. Specific reasons will be stated in support of requested hydrogeological evaluations in each case.
- (6) Road, street and access requirements, including necessary right of way acquisition and/or dedications, will be subject to the Department of Public Works recommendations for each parcel in accordance with the County Subdivision Ordinance and with standards and policies of that department.
- (7) The land must be suitable for septic tank use according to the County Ordinance Code criteria and Health Services Department Regulations. Percolations tests must be passed on all lots prior to the filing of the Parcel or Final Map.
- (8) The applicant shall indicate on the Tentative Subdivision Map the following information for each parcel: proposed driveways, building site, well site, leach field site, provision for water storage for fire fighting. Homesites shall be designed with a minimum of grading. Where significant grading is needed and acceptable erosion control plan shall be provided with the application. Home siting shall be reviewed for energy conservation features (building site orientation and feasibility for solar facilities will be considered).
- (9) Parcels shall be reasonable free of hazards, including, but not limited to flooding and high landsliding susceptibility.
- (10) Special detailed plans may be required for provision of flood control, roads and other services.
- (11) Developer shall obtain requirements for road and flood control improvements from County Public Works Department prior to submitting an application for subdivision. Required improvements shall be included on the Tentative Subdivision Map.
- (12) Adequate fencing shall be provided to contain domestic animals on the residential parcels with all gates to be closeable by a nearby rancher/farmer when necessary.
- (13) Exception to any of the above Rural Residential Ranchette criteria may be considered by the hearing body upon a showing, in writing, of unique or unusual circumstances relative to the subject property.

Development Review Process

- 8-p. Within the major open space areas, consider approval of development that is only directly related to agricultural production, recreation, water-related recreation, or the utilization of mineral, soil, water, and animal resources; or that is very low-density residential development of an essentially open character. or 3) agricultural-residential uses of similar character.
- 8-q. Discourage applications for major subdivisions of agricultural lands. Where such applications are accepted for processing, require concurrent application for rezoning of such lands to the Planned Unit Development District. Require deed of development rights to prevent further subdivision.
- 8-r. Identify and map those properties that include prime soils (Class I and II capability according to the U.S. Soil Conservation Service) for use in the review of development applications.

Zoning Ordinance Revisions

- 8-s. Modify the agricultural zoning districts to allow agricultural service businesses and uses in agriculturally designated areas as follows:
 - o Small agricultural service businesses, which can be defined as a home occupation, are permissible in all agricultural designations;
 - o Larger agricultural service businesses which have more than one employee but are clearly subordinate to on-site production activities, and which occupy less than 1/2 acre of land and do not adversely affect agricultural production in the area, may be permissible in all agricultural designations, subject to issuance of a land use permit;
 - o Agricultural service businesses that occupy more than 1/2 acre of land and are not subordinate to on-site production activities will require rezoning with a "Agricultural Service Combining District" overlay.
- 8-t. Agricultural employee housing may be permitted, in addition to the residential density allowed by the underlying zoning or land use designation, in accordance with the needs of the local production sector. Criteria to establish the specific conditions which will apply to the agricultural employee housing shall be included in the Zoning Ordinance and shall address permanent and transient employees.
- 8-u. Review and revise, as necessary, minimum lot size standards in agricultural zoning districts to be consistent with the goals and policies in this General Plan.

Infrastructure Services

- 8-v. Detach land in agricultural production not planned for development from any special taxing districts which are intended to serve urban needs, such as sewage treatment and ~~local/parks~~ hospital districts.
- 8-w. Allow water lines or other urban infrastructure which must be constructed across agricultural properties outside LAFCO designated Spheres of Influence in order to serve parks, other open space uses, or existing urban development, of a size as needed to serve the open space or existing urban uses. Do not require adjacent property owners to pay for the service, and mitigate to an insignificant level any identified growth-inducing impacts of the project.
- 8-x. Provide a circulation system appropriate to rural development to support land uses and economic activity.
- 8-y. ~~Discourage~~ Discourage the construction of growth inducing highways or roads ~~to~~ serving areas outside LAFCO designated Spheres of Influence unless the growth inducing impacts of the project have been mitigated ~~to an insignificant level~~. Highways built in non-urban areas should limit access to what is necessary to serve planned land uses and emergency needs.
- 8-z. Encourage water reclamation and other public improvement projects which would increase, enhance, and protect agricultural land and its production capabilities.

Agricultural/Urban Buffers and Conflicts

- 8-aa. Require adequate setbacks for any non-agricultural structures located within or adjacent to cultivated agriculture.
- 8-ab. Where a discretionary development permit is sought within or adjacent to agricultural districts, reduce potential conflicts by creation of a natural or constructed buffer between the agricultural and urban land use. Such buffers must occur on the parcel for which the discretionary permit is sought.
- 8-ac. Where conflicts which cannot be mitigated exist between agricultural and residential uses, give priority to maintaining the agricultural use.
- 8-ad. In grazing areas, include within buffers fencing that will effectively contain grazing animals, keep domestic dogs out of grazing areas, and deter trespassing.
- 8-ae. Conduct a study of the nature and extent of the conflicts between agriculture and urban land uses; identify the present and future areas where agriculture and urban land uses border one another; establish specific design guidelines which address:

- o the appropriate width and design features of buffer areas and fencing;
 - o the necessary organizational components of homeowners' association language that provide for maintenance of buffers and fences and other measures such as surety bonds;
 - o necessary amendments to the Zoning Ordinance and Subdivision Ordinance which assure that the design guidelines are rigorously imposed and enforced; and
 - o control of trespassing, crop theft, and vandalism.
- 8-af. Require an agricultural notification statement in the property deeds for all new residential lots created in or adjacent to planned agricultural districts. The statement shall inform owners about allowed adjacent agricultural practices.
- 8-ag. Sponsor educational programs in cooperation with the county's school districts and the East Bay Regional Park District to inform students regarding need to respect agricultural uses.
- 8-ah. Prepare a "Right-to-Farm" Ordinance which clearly protects ranchers and farmers within an agricultural district from nuisance complaints and unreasonable restrictions or regulations on farm structures or farming practices. The ordinance will describe normal farm practices expected to occur in agricultural areas and assure the right of the farmer or rancher to continue such practices subject to appropriate health and safety standards.
- 8-ai. Vigorously enforce the provisions of the existing State of California agricultural nuisance law by the appropriate County departments.
- 8-aj. Control the predation on grazing animals by domestic dogs by:
- (1) establishing a countywide law which prohibits free running dogs;
 - (2) posting grazing areas with signs specifying the provisions and penalties imposed by the law;
 - (3) imposing civil fines upon dog owners whose dogs damage livestock; and
 - (4) increasing efforts by County Animal Control to manage free running dogs.

Programs to Support the Economic Viability of Agriculture

- 8-ak. Create and support a "Locally Grown in Contra Costa" marketing program. Permit and support a wide variety of promotional and marketing activities of county-grown and processed products. Continue to support the "Harvest Time" Program.
- 8-al. Research means of maintaining and improving the economic viability of agriculture in the county.

- 8-am. Develop Private Industry Council (PIC) programs to assist agriculture provided that such assistance is requested. Individual participation shall be voluntary.
- 8-an. Ensure that the agricultural industry is as eligible for economic assistance and support as is provided to other industries.
- 8-ao. To the extent possible, consider the promotion of agriculture produced in Contra Costa County as a priority in the disbursement of available County funds.
- 8-ap. Cooperate with the county's agricultural interests and communicate supportive positions to State and Federal legislative bodies when major legislation is proposed which may affect local agriculture.
- 8-aq. Adopt a "Buy American" policy regarding the purchase of agricultural goods.
- 8-ar. Allow agriculturally-related commercial and industrial uses to be conveniently and accessibly located in commercial agriculture areas, subject to appropriate planning and/or permit procedures.

Agricultural Preserve Contracts

- 8-as. Encourage owners of agricultural land to enter the Agricultural Preserve Program.
- 8-at. Encourage the continued use of Agricultural Preserve contracts to maintain land in agriculture and to lower property taxes for participating farmers and ranchers.
- 8-au. Investigate options for making Agricultural Preserve contracts more attractive, such as changes in allowable uses or increasing tax benefits.
- 8-av. Support property tax assessments within agricultural areas based upon their agricultural use, for properties that do not qualify for the Williamson Act.

Transfer/Purchase of Development Rights

- 8-aw. Study the impacts of adopting Transfer or Purchase of Development Rights (TDR/PDR) programs in priority areas of the county as a means of mitigating development pressures and preserving agricultural land. Conduct a detailed study of transfer/purchase of the development credits approach to determine:
 - o the overall feasibility and usefulness in implementing General Plan policy;
 - o the specific mechanisms to be utilized;

- o the areas of the county where these mechanisms could be utilized;
- o the organizational and administrative requirements of such a program, including an analysis of the benefits of creating a non-profit land trust to hold agricultural land and easements;
- o the cost of the program to the County and potential revenue sources.

Water Conservation and Supply

- 8-ax. Conduct a study of the agricultural irrigation water supply that addresses:
 - o existing suppliers and their water delivery infrastructure, water contracts and rights, and their ability to provide irrigation water;
 - o competing demands for land and water that affect the long-term availability of irrigation water;
 - o investigation of alternative water supplies including treated municipal wastewater; and
 - o methods whereby the County can help assure the long term supply of irrigation water to the county's farmers.
- 8-ay. Explore and encourage concepts for water conservation and use of agricultural irrigation in order to extend existing supplies.
- 8-az. Encourage local, state, and federal agencies to investigate and recommend methods of maintaining agricultural productivity with reduced amounts of toxic and nutritive chemicals which can damage water quality.

Levee Maintenance

- 8-ba. Seek State and Federal grants to assist in levee maintenance and reconstruction projects.
- 8-bb. Identify local financing mechanisms for funding levee improvements.
- 8-bc. Approve land use policies and other regulations which conserve and protect existing levees.
- 8-bd. Encourage levee maintenance and construction that is sensitive to the preservation of riparian habitat, where feasible.

Other Programs

- 8-be. The County shall assist the appropriate agencies and non-profit organizations in developing programs for providing adequate housing for transient farm workers.
- 8-bf. Support the County Farm Advisor and the other county departments and special districts which provide services to agriculture, including educational programs that assist farmers and ranchers with financial planning and to effectively utilize available State and Federal programs.

Renewable Energy Resources

Introduction

Contra Costa County has potential energy resources which have not yet been fully utilized. There are two main sources of renewable energy available to the County: wind energy and solar power.

The Energy Resources Conservation and Development Commission of the State of California has identified the Altamont Pass area, including the Byron Hills portion of Contra Costa County, as an area with high wind potential. The private sector responded to that information and to Federal and State tax incentives, which no longer exist, by moving rapidly into the wind energy business as a secondary use to agricultural pursuits. Applications for clusters of wind turbines are generally referred to as "Wind Farms". While a substantial number of wind turbines have been approved by the County and a large number of units have been constructed under those approvals, there is more property within the wind resource area that could be considered for additional wind farm development. This potential needs to be balanced against protection of the environmental resources of the southeast County area.

The County's mild climate makes solar heating feasible if structures are properly sited in developments and have their solar access protected. State Legislation now exists to protect individual solar access to properties. Solar heating for swimming pools has become common. Nonetheless, use of this resource has only begun to be harnessed.

Additionally, there are opportunities for conversion of municipal and other wastes to energy resources (e.g., methane). Furthermore, retrofitting existing structures can save substantial amounts of energy.

Goals

- 8-J. To encourage the use of renewable resources in areas which are compatible with the maintenance of environmental quality.
- 8-K. To reduce energy use in the county in order to avoid risks of air pollution and energy shortages which could prevent orderly development.

Policies

- 8-50. Commercial wind farms shall be restricted to the south Byron Hills portion of the county.
- 8-51. New residential uses should be discouraged within the wind energy areas (depicted in Figure VIII-3), since clusters of wind turbines generate a certain amount of noise. Turbines could become a nuisance if new subdivisions or residences are allowed immediately adjacent to the existing turbines or on properties already approved for wind turbines.
- 8-52. All new wind turbine applications shall comply, at a minimum, with the site specific criteria included in the wind energy conversion systems regulations in the County Ordinance Code.
- 8-53. Energy recovery projects, e.g. methane recovery from sewage (biomass), shall be encouraged, subject to adequate environmental protection.
- 8-54. The County shall cooperate with PG&E to retrofit existing homes with energy saving devices.

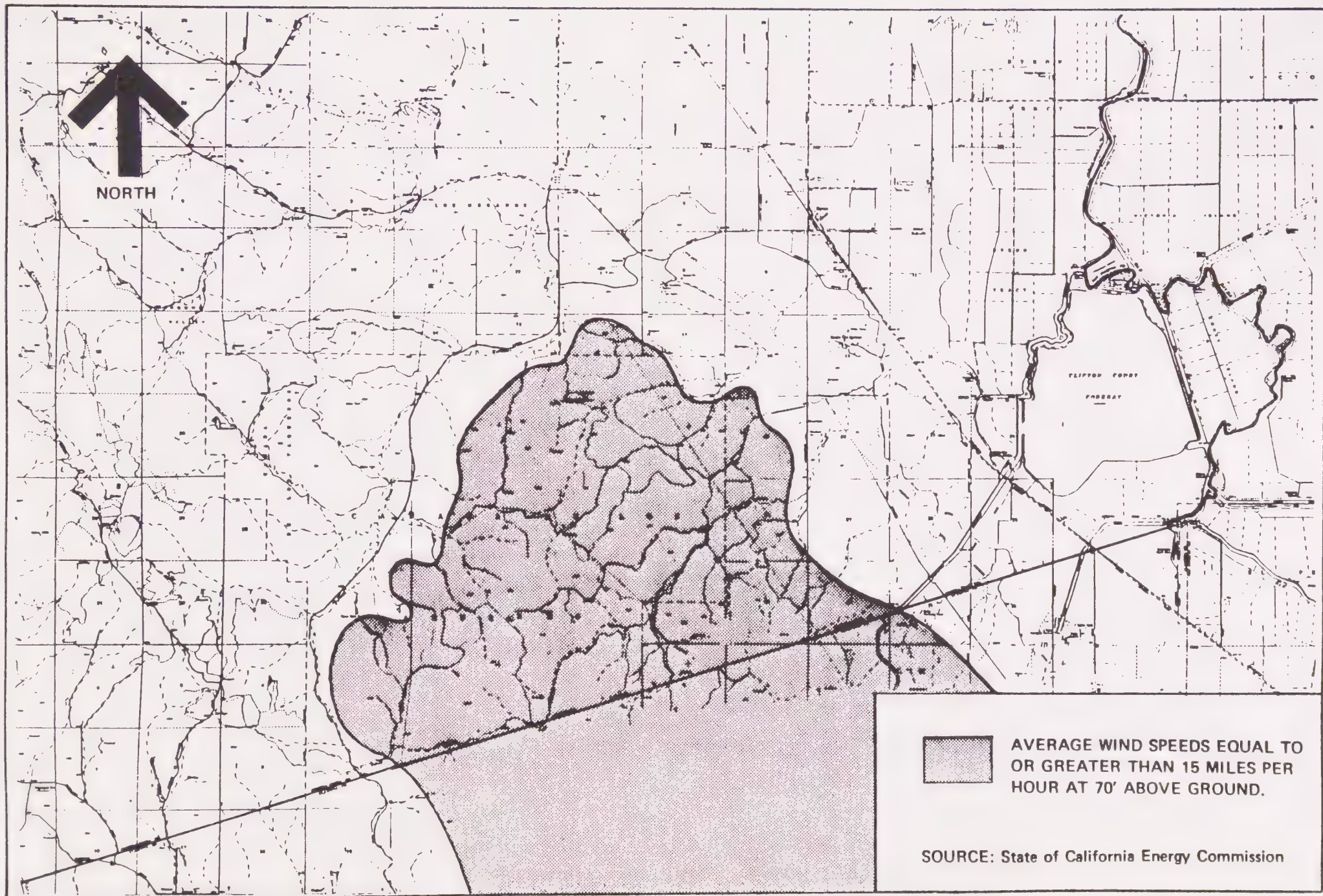
Map of Resource Area

Figure VIII-3 shows the generalized boundaries of the wind energy resource areas based on materials developed for the State Energy Commission. The map identifies those areas that experience average wind speeds capable of being utilized for wind energy turbines (generally at least 15 mph at an altitude of 70 feet above the ground).

Implementation Measures

- 8-bg. Consider wind farm uses to be appropriate land uses within the Byron Hills resource area or along the periphery of the wind energy resource area, subject to careful review of the environmental impacts of specific wind farm proposals.
- 8-bh. If wind farms become obsolete or abandoned, they shall be entirely removed and the land should be returned to its natural pre-project condition.
- 8-bi. Require bonding as a condition of project approval to ensure that obsolete or abandoned windfarms are returned to pre-project conditions. Also require periodic review of bonding levels to determine that an appropriate amount is continuously held as surety.
- 8-bj. Prepare guidelines for solar design to be included as a revision to the subdivision ordinance.
- 8-bk. Include provisions for solar access within design review of projects.

FIG. VIII - 3 WIND ENERGY RESOURCE AREA
SOUTHEAST CONTRA COSTA COUNTY



Mineral Resource Areas

Introduction

This section outlines appropriate policies for conserving and utilizing the County's mineral resources for current and future development, while ensuring that adverse environmental effects resulting from surface mining operations are minimized. Mineral extraction is important in Contra Costa County, as in other counties, because minerals such as crushed rock, sand, and other elements supply the necessary components for local home building as well as for a diverse array of other industries. As such, the mineral industry is responsible for significant employment within the county.

To protect valuable mineral resources in California, the State Legislature has adopted the Surface Mining and Reclamation Act (SMARA), which includes a process called "classification-designation." The purpose of this process is to provide local agencies with information about the location, need and importance of various mineral resources within their jurisdiction, and to insure this information is used in local land use decisions. The first mineral commodity which has been researched and designated by the State in each county is "construction aggregate," which includes sand, gravel and crushed rock.

The most important mineral resources that are currently mined in the County include crushed rock near Mt. Zion, on the north side of Mt. Diablo, in the Concord area; shale in the Port Costa area; and sand and sandstone deposits, mined from several locations, but focussed in the Byron area of southeast County.

Goals

- 8-L. To ensure the continued viability of mineral extraction operations which are important to the county's economy.
- 8-M. To protect areas of identified valuable mineral resources from incompatible nearby land uses through zoning and other land use regulations.
- 8-N. To minimize and buffer the impact of surface mining activities on the surrounding land uses and the natural environment.

Policies

- 8-55. Mining and quarrying shall be a permitted use in certain privately owned areas which are in an open space designation in the General Plan (e.g. Open Space, Agricultural Lands, etc.) and which contain known mineral deposits with potential commercial value. These deposits include, but are not limited to, rocks, gravel, sand, salt and clay.
- 8-56. The shale mined at the Port Costa Materials Company site within an area designated as Heavy Industry and Agricultural Lands is compatible with this plan, although the long-term plan for the site, upon completion of quarrying, is for open space and park uses.

- 8-57. Incompatible land uses shall not be permitted within the mineral resource impact areas identified as containing significant sand and gravel deposits (as shown in Figure VIII-7).

Incompatible uses are defined as land uses inherently incompatible with mining and/or uses that require a high public or private investment in structures, land improvements, and landscaping that prevents mining because of the higher economic value of the land and its improvements.

- 8-58. Future development in the vicinity of valuable mineral resource zones shall be planned and designed to minimize disturbance to residential areas or other sensitive land uses and to permit the safe passage of quarry trucks.
- 8-59. Development of compatible land uses shall be encouraged within 1,000 feet of the quarrying sites. Compatible uses include secondary industrial operations related to the quarry operation, recreation facilities, parks, agricultural uses, and permanent open space.
- 8-60. Opportunities to recycle resources and materials related to quarrying operations shall be encouraged where they are compatible with adjacent land uses.
- 8-61. Reclamation plans prepared for the closure of quarries shall include conditions addressing the future use of the property, and a condition of the reclamation plan shall assure that future use.
- 8-62. Any proposals to expand existing quarries, or to create new quarries, adjacent to Mt. Diablo State Park shall carefully analyze impacts upon the park.

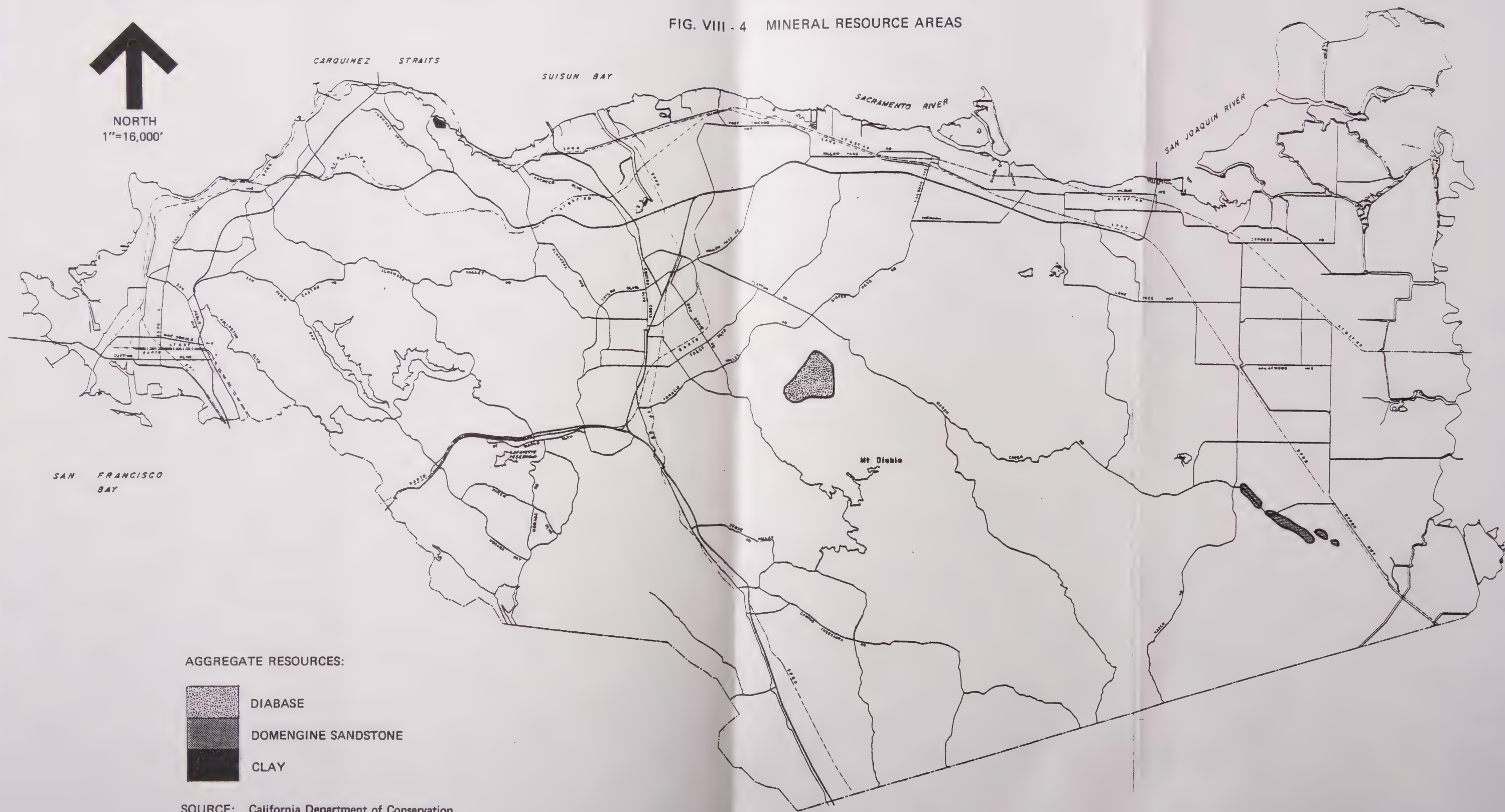
Map of Resource Areas

Figure VIII-4 maps the significant mineral resource areas found within the county which are to be protected by this plan in the unincorporated area.

"Sector T" shown on Figure VIII-4 is a regionally significant deposit of diabase located in the Mt. Zion area near Concord and Clayton. Diabase is an intrusive igneous rock which is used extensively for roadbase and as rip-rap to prevent streambank erosion. Both Lone Star and Kaiser quarries utilize this resource. Their continued operation is important to the County and the region.

Any future expansion of the Mt. Zion quarrying operations that require a new permit from the County shall be required to analyze the impacts on Mt. Diablo State Park. Ultimately, upon closure of the mining operations, the quarried land should be considered for transfer to the State Park. Residential development adjacent to the Mt. Zion quarries is being considered by Concord; any development will need to be adequately buffered so as not to create an incompatible use next to this resource.

FIG. VIII - 4 MINERAL RESOURCE AREAS



SOURCE: California Department of Conservation
Division of Mines and Geology
Sacramento, CA

**CONTRA COSTA COUNTY
CALIFORNIA**

"Sector GG" identified on Figure VIII-4 consists of a geological deposit of domesine sandstone, located just southerly of Camino Diablo and easterly of Vasco Road. This mineral resource is a valuable commodity for the continued economic vitality of Contra Costa County, since this is the sole deposit of this material in the State of California, and is an important resource nationally. Domesine sandstone is used by Pacific Gas & Electric Company as trench backfill, as well as being a primary ingredient in the manufacture of heat resistant glass. This product is utilized by the national space program. The resource extends beyond the boundaries designated by the State. This plan calls for the protection of the entire sandstone resource area.

An additional area in the county which has a long history of mineral resource production is located near Port Costa. Mining in this area began at the turn of the century to support a brick manufacturing operation which is unique in the county, and one of only a few in the entire state. Mining and brick production have been continuous from 1905 to the present time, under several different ownerships. In 1966, a lightweight shale aggregate facility was constructed. This resource area is designated on this plan for protection. The Carquinez Straits Regional Shoreline Park, now being developed in the area, surrounds the site. Efforts will be required to ensure the compatibility of park and recreation uses with the mining operations.

Implementation Measures

- 8-bl. Rezone designated mineral resource areas to stringent agricultural zoning designations (A-20, A-40, or A-80) to protect them for future recovery and from incompatible land uses.
- 8-bm. Establish a buffer zone around designated resource areas which will be rezoned to restrictive agricultural zones of A-20, A-40 or A-80.
- 8-bn. Encourage the recording of notices on property titles in mineral resource areas identifying the presence of important mineral resources.
- 8-bo. Limited residential or ranchette development of mineral resource properties may be appropriate, but residential use shall be identified as secondary to mineral operations and will not be allowed to preclude the full utilization of identified mineral resources. Any nearby residential use will be permitted conditionally after recognizing the probable expansion of mineral operations and accepting the possible nuisance and inconvenience associated with mineral operations.
- 8-bp. Require the posting of bonds for all new mining and quarrying permits to guarantee timely and faithful performance of reclamation and mining plans.
- 8-bq. In analyzing the environmental effects of mining operations, the County shall consider, at a minimum, the following concepts in granting a new permit:

- o natural vegetation for buffering;
- o adequate setbacks;
- o central location of processing equipment and equipment storage;
- o dust control;
- o adequate access roads;
- o erosion control;
- o revegetation and re-establishment of natural appearing features on the site;
- o ultimate land use;
- o hours of operation;
- o night lighting;
- o security fencing;
- o noise impacts; and
- o protection of water quality.

8-br. Work with the Cities of Concord and Clayton to protect the aggregate resources around Mount Zion.

Oil and Gas Resources

Introduction

Contra Costa County is one of the leading counties in the State in terms of natural gas production. The county also has a small volume of oil production. The most productive oil and gas fields are concentrated in the eastern portion of the county. The area contains the Brentwood, Oakley, East Brentwood and Dutch Slough fields and a portion of the Rio Vista field, the largest of its type in the State. These fields are all located north of the City of Brentwood and east of Antioch. The only other field of significance, Los Medanos, is located in the hilly area north of Route 4, between West Pittsburg and the Concord Weapons Station. Other smaller resource areas are scattered throughout the County.

The production of oil and gas from wells is an important secondary use of land in the County. The policy issues on this matter deal more with regulation on the extraction of this resource than the appropriateness of use. Issues which need to be dealt with include noise (including drilling, operation, and production enhancement), aesthetics, access to the wells and the impact of equipment on public roads. Efforts need to be made to encourage unified drilling sites to minimize these land use impacts. Natural gas storage areas, such as the Los Medanos Gas Storage field, should be encouraged as more efficient than using surface storage tanks.

Goals

- 8-0. To achieve utilization of oil and gas resources in a manner beneficial to all county residents.
- 8-P. To minimize the impact of oil and gas extraction activities on the surrounding land uses and the natural environment.

Policies

- 8-63. The production of gas and oil resources shall be encouraged as a way to support the agricultural viability of rural areas.
- 8-64. New wells shall be reviewed and approved in a fashion to minimize noise, aesthetic and public safety problems.
- 8-65. The potential impacts of oil and gas extraction on the subsistence of land, especially land near bodies of water and in the Delta, should be investigated. If necessary, special regulations should be proposed and applied to existing operations.
- 8-66. New wells shall not be allowed to be drilled in wetland areas.
- 8-67. Where safety can be assured, the storage of gas in underground natural basins shall be considered preferable to above ground storage tanks.

Implementation Measures

- 8-bs. Develop standards for resolving conflicts between proposed wells and residences in terms of setbacks, allowable noise, etc.
- 8-bt. Review the need for impact fees for new well permits on area roads.
- 8-bu. Fund and monitor the subsidence studies currently underway to better understand the impacts of continued drilling of new wells and pumping of these resources.
- 8-bv. Review procedures for well abandonment to assure that the land is returned to its natural surface condition.
- 8-bw. Prepare a Wetlands Protection Map identifying areas subject to prohibition of oil and gas well drilling.

Urban and Rural Creeks

Introduction

When Contra Costa County was sparsely populated and predominantly rural, creeks and streams flowed uninterrupted from the coastal hills to the Bay and Delta. These watercourses supported a wide variety of plant, animal, and aquatic life. Riparian vegetation and streamside habitats minimized erosion, sustained perennial streams, contributed to groundwater reserves, moderated temperature extremes and provided an attractive and pleasant environment. It is of benefit to County residents to preserve vestiges of this pre-settlement environment and to work toward re-establishing this environmental heritage.

As agricultural land in portions of the county was converted to urban uses, permeable ground surfaces were replaced with impervious surfaces. Paving, roofs, and efficient drainage systems reduced the proportion of rainfall percolating into the ground and increased the volume and velocity of surface runoff carried

to the creek channels. This resulted in increased flood frequency and severity, channel cutting and loss of vegetation in upper watersheds, and silting in lower channels.

Creeks and streams were relocated and realigned to accommodate increased flows. Channels were increased in width and depth and lined with concrete or riprap. Creeks were placed in conduits and culverts. Although these improvements have been effective in transporting stormwater runoff and in reducing flooding and property damage, these benefits have come at the expense of natural channels and native riparian habitat, which are difficult to replace and are sometimes irreplaceable.

Traditionally, the more efficient the drainage system feeding into a natural watercourse, the greater the damage to natural waterways and streamside vegetation and the greater the downstream flood damage risk. The continued use of traditional drainage facilities in individual development projects exacerbates these problems. Many undeveloped properties lie upstream from established urban development. Each new development project which increases peak runoff, although seemingly insignificant, contributes to a future need to make improvements to existing downstream public flood control facilities and natural channels at substantial cost to county residents. The use of alternate stormwater management techniques such as the floodplain, the leveed floodway, the bypass channel, and the detention basin can either lessen or eliminate completely the need for these improvements, reducing public costs and providing a more diverse and attractive environment.

While it may be desirable to keep all of the remaining creeks and streams in their natural state, this is not always possible. Within existing developed areas, structural modifications to watercourses are often the only viable alternative. The shortage of available land within a built-up urbanized area, as well as its high cost, may rule out the possibility of keeping a watercourse in its natural state. Where this is the case, alternate structural approaches can be utilized which are designed to be compatible with their environment. Instead of riprap and concrete, slope protection devices can be used to stabilize banks. Landscaping can also be used to soften the visual impact of structurally modified watercourses.

Control of flooding is not the only drainage concern. With increased development and stormwater runoff, a wide variety of nutrients and toxic substances have been introduced into county waters. Nutrient wastes in the form of sewage, agricultural fertilizers, and manure lead to reduced dissolved oxygen in surface waters and limit the capacity of water to support aquatic organisms. Toxic substances, such as industrial wastes, insecticides and herbicides, can poison wildlife and become concentrated in the food chain. Both types of pollutants can adversely affect the quality of groundwater.

Erosion and sedimentation often inflict heavy public costs for flood control, harbor and channel dredging, post-flood clearing and private property damage, besides damaging aquatic life and carrying toxic substances into public and private water supplies. Design and construction techniques have been developed which are cost effective and essential to erosion and sedimentation reduction.

There is also a need to provide enhanced opportunities for public access to creeks, streams, and drainage channels, where conditions and liability constraints permit. Total county population will continue to increase and with it the demand for recreation facilities will grow. Drainage features which can be made into parks or open space, or incorporated as assets into new development projects, will be used and appreciated by present and future county residents.

The Contra Costa County Flood Control and Water Conservation District is empowered to control flood and storm waters throughout the county. Even though the district has no direct influence over the County or the cities regarding land use and planning matters, the district does develop drainage plans for entire watersheds which cross jurisdictional boundaries. These drainage plans specify the flood control improvements needed to serve planned development in the area and are used to set drainage fees assessed against new development.

A more complete discussion of adopted and proposed drainage plans, as well as numerous flood control goals, policies and implementation measures, are included in the "Drainage and Flood Control" section of the Public Facilities/Services Element (Chapter VII). Readers should note that there is a great deal of overlap between these two sections of the General Plan; some goals and policies are repeated in both sections. Both this section and the "Drainage and Flood Control" section in Chapter VII should be consulted together for a full understanding of County policies regarding flood control, waterways and riparian areas.

Goals

- 8-Q. To maintain the ecology and hydrology of creeks and streams and provide an amenity to the public, while at the same time preventing flooding, erosion and danger to life and property.
- 8-R. To preserve and restore remaining natural waterways in the county which have been identified as important and irreplaceable natural resources.
- 8-S. To employ alternative drainage system improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible.
- 8-T. To enhance opportunities for public accessibility and recreational use of creeks, streams, drainage channels and other drainage system improvements.

Policies

Policies to Protect and Maintain Riparian Zones

- 8-68. Where feasible, existing natural waterways shall be protected and preserved in their natural state, and channels which already are modified shall be restored. A natural waterway is defined as a waterway which can support its own environment of vegetation, fowl, fish and reptiles, and which appears natural.

- 8-69. Creeks and streams determined to be important and irreplaceable natural resources shall be retained in their natural state whenever possible to maintain water quality, wildlife diversity, aesthetic values, and recreation opportunities.
- 8-70. Wherever possible, remaining natural watercourses and their riparian zones shall be restored to improve their function as habitats.
- 8-71. Fisheries in the streams within the county shall be preserved and re-established wherever possible.
- 8-72. Riparian habitat shall be protected by providing for channel cross-sections adequate to carry 100-year flows, as per policies contained in the Public Facilities/Services Element. If it is not possible to provide a channel cross section sufficient to carry the 100-year flow, then detention basins should be developed.

Policies for New Development Along Natural Watercourses

- 8-73. Natural watercourses shall be integrated into new development in such a way that they are accessible and provide a positive visual element.
- 8-74. Existing native riparian habitat found to be significant shall be preserved and enhanced by new development unless preservation prevents the operation of the permitted use on the site.
- 8-75. On-site water control shall be required of major new developments so that no increase in peak flows occurs relative to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.
- 8-76. New development which modifies or destroys riparian habitat shall be responsible for restoring and enhancing an equivalent amount of habitat within or near the project area.
- 8-77. Setback areas shall be provided along natural creeks and streams in areas planned for urbanization. The setback areas shall be of a width adequate to allow maintenance and to prevent damage to adjacent structures, the natural channel and associated riparian vegetation.
- 8-78. Deeded development rights for lands within established setback areas along creeks or streams shall be sought to assure creek preservation and to protect adjacent structures and the loss of private property.
- 8-79. Construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.

- 8-80. Revegetation of a watercourse shall employ native vegetation, providing the type of vegetation is compatible with the watercourse's maintenance program and does not adversely alter channel capacity.

Implementation Measures

Riparian Resources Inventory

- 8-bx. As a first priority after the adoption of this plan, work with appropriate agencies to inventory the county's riparian resources and to identify areas warranting preservation and enhancement.

Zoning and Code Revisions

- 8-by. Review and revise, if necessary, the County ordinance code to provide for the protection and enhancement of watercourses and riparian vegetation, where determined to be warranted by the planning approval body, (e.g. building setback requirements, regulations limiting the removal of trees and vegetation, etc.).

Other Programs

- 8-bz. Develop a program that fosters the participation of public agencies, private organizations and individuals in the development of watershed management practices that reduce soil loss and excessive runoff (i.e. control of grazing in upper watersheds, timing of release of water from upstream dams, revegetation of upper watersheds), and that minimize the effect on downstream areas.
- 8-ca. Develop a program for the restoration of riparian vegetation in rural creeks where grazing activities are reducing the extent of the vegetation and are eroding channel banks.
- 8-cb. Develop guidelines for creek maintenance practices which assure that native vegetation is not removed unnecessarily. These guidelines should also assure that maintenance is scheduled to minimize disruption of wildlife breeding practices.

Development Review Process

- 8-cc. Review all public and private projects adjacent to and within creeks and streams to determine their conformance with the policies of this General Plan.
- 8-cd. As a priority, define and implement a development review process for new projects that ensures conformance with the stream and riparian corridor protection policies of this plan.

- 8-ce. During the review of proposed development plans, the County staff shall determine the required building setbacks along natural creeks and streams, and seek to obtain deeded development rights on lands within setback areas.
- 8-cf. New parcels which are created shall include adequate space outside of the watercourses' setback areas for pools, patios, and appurtenant structures to ensure that property owners will not place improvements within the areas which require protection.
- 8-cg. Through the environmental review process, the likely effects of construction and other proposed activities on nearby natural watercourses and related open space shall be determined. Measures shall be identified that will mitigate these effects and encourage the preservation of natural waterways and related open space. Such measures may include, but are not limited to:
- o Clustering of buildings and other site design features;
 - o Restoration or enhancement of other riparian habitat within or near the project area; and
 - o Purchase of development rights for lands within other stream setback areas.
- 8-ch. When alteration of streambanks or streambeds is proposed, notify the State Department of Fish and Game in accordance with their authority under State law and/or when their assistance is needed.

Air Quality

Introduction

Although not required by law, air quality considerations within a General Plan provide benefits in terms of improved local and regional air quality. There is no state or local agency with responsibility for air quality planning at the local level. The State Air Resources Board has statewide responsibility for air quality, and the Bay Area Air Quality Management District has permitting authority for stationary air pollutant sources in the region. These agencies' participation in local land use planning is normally limited to commenting on Environmental Impact Reports.

Consideration of air quality planning at the local level has taken on a new importance in recent years. Since about 1970 continuous progress has been made in improving air quality in virtually all areas of the nation. Stringent controls on automobiles and stationary sources of air pollutants such as factories and refineries, as well as controls on area sources such as paints, solvents and gasoline stations have resulted in improved air quality despite increases in population, employment and vehicular traffic. These controls have not resulted in all air quality standards being attained in the Bay Area, however.

Past efforts at improving air quality have focused on "hardware" type solutions such as requiring pollution abatement equipment for industrial sources or requiring catalytic converters on new automobiles. The simplest and most cost-effective control measures were the ones first implemented; future measures of this type will provide diminishing returns.

Local air quality planning offers another means of addressing the air pollution problem. Future air quality will be partially determined by local land use and transportation decisions. Judicious land use and transportation planning at the city and county level represents another means of improving air quality on both the local and regional scale. Such planning can keep a balance between growth rates and improvements to the transportation system, reduce long distance commuting, encourage and support non-auto transportation, and reduce future land use conflicts related to air pollution.

In a planning sense, air quality is closely related to several other areas within the General Plan. Listed below are other Elements of the Plan which contain policies and implementation measures that are consistent with efforts to improve air quality and are considered part of the Air Quality component of the General Plan.

- o Transportation and Circulation Element:
 - circulation phasing and coordination
 - roadway routing and design improvements
 - alternative transportation and circulation systems
- o Land Use Element:
 - jobs/housing balance
 - growth management and community boundaries
- o Safety Element:
 - protection from hazardous materials

Goals

- 8-U. To meet federal air quality standards for all air pollutants.
- 8-V. To continue to support federal, state and regional efforts to reduce air pollution in order to protect human and environmental health.
- 8-W. Air quality shall be restored to a more healthful level in the area.
- 8-X. Vehicle Miles Travelled (VMT) throughout the County shall be reduced.
- 8-Y. The percentage of Average Daily Traffic trips occurring at Peak hours shall be reduced.

Policies

- 8-81. Development and roadway improvements shall be phased to avoid congestion.

- 8-82. The free flow of vehicular traffic shall be facilitated on major arterials.
- 8-83. Vehicular emissions shall be reduced throughout the County.
- 8-84. A safe, convenient and effective bicycle and trail system shall be created and maintained to encourage increased bicycle use and walking as alternatives to driving.
- 8-85. A safe and convenient pedestrian system shall be created and maintained in order to encourage walking as an alternative to driving.
- 8-86. Proposed projects shall be reviewed for their potential to impact air quality conditions.
- 8-87. Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.
- 8-88. Land uses which are sensitive to air pollution shall be separated from sources of air pollution.
- 8-89. Air quality planning efforts shall be coordinated with other local, regional and state agencies.
- 8-90. New housing in infill and peripheral areas which are adjacent to existing residential development shall be encouraged.

Analysis and Maps of Resource

Contra Costa County contains a multitude of air pollutant sources. Inventories of these sources have been prepared by the Bay Area Air Quality Management District, classifying sources as to type and strength. Table VIII-3 lists an emissions inventory for Contra Costa County for five specific pollutants, known as "criteria" pollutants. Ambient air quality standards, set by both the federal and state government, exist for the "criteria" pollutants. Table VIII-3 shows that automobiles are the largest source of each pollutant except for sulfur dioxide, which is primarily generated by petroleum refining and from power plants.

The concentrations of pollutants in the atmosphere are dependant not only on the amount of pollutant emitted, but on the ability of the atmosphere to transport and dilute the pollutant. Some pollutants, such as ozone, are not directly emitted to the atmosphere by any sources, but are the result of chemical reactions in the atmosphere between other pollutants. The chemical reaction that creates ozone in an urban atmosphere occurs between reactive organic gases (ROG) and oxides of nitrogen (NO_x) in the presence of sunshine. The rate of reaction is very dependent on sunlight and temperature, so ozone concentrations will depend on the strength of sunlight and the temperature as well as transport and dilution by the wind.

Table VIII-3
Inventory of Air Pollutant Emissions
for Contra Costa County

SOURCE	EMISSIONS IN TONS/DAY				
	<u>Part.</u>	<u>ROG</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>
<u>Petroleum Refining</u>					
Petroleum refining	1.4	0.1	6.3	18.5	0.1
Other refining processes	0.2	3.8	0.0	5.5	0.3
Combustion of fuels	1.9	0.8	30.6	13.9	3.3
Loading, storage and blending	0.0	7.9	0.0	0.0	0.0
Process leaks (fugitive)	0.0	16.2	0.0	0.0	0.0
<u>Chemical, Ind/Commercial Processes</u>					
Sulfur and sulfuric acid	0.1	0.1	0.0	3.7	1.6
Other chemical processes	1.1	0.5	1.0	0.1	31.3
Metallurgical and mineral	5.5	0.0	0.0	0.2	0.6
Construction and demolition	15.5	0.0	0.0	0.0	0.0
Gas distribution	0.0	6.4	0.0	0.0	0.0
Other industrial/commercial	5.3	3.3	2.3	3.2	0.0
<u>Organic Compounds Evaporation</u>					
Gasoline bulk plants	0.0	1.7	0.0	0.0	0.0
Gasoline filling stations	0.0	0.9	0.0	0.0	0.0
Architectural coating	0.0	5.4	0.0	0.0	0.0
Other surface coating	0.0	5.2	0.0	0.0	0.0
Solvent degreasing	0.0	0.6	0.0	0.0	0.0
Dry cleaners	0.0	0.8	0.0	0.0	0.0
Printing	0.0	0.8	0.0	0.0	0.0
Other organics evaporation	0.0	3.5	0.0	0.0	0.0
<u>Combustion</u>					
Domestic	3.4	1.3	2.9	0.1	16.6
Utilities - power plants	0.7	0.1	24.0	2.5	4.8
Cogeneration	0.2	0.2	6.9	0.2	1.9
Reciprocating engines	0.5	1.3	3.4	0.1	13.4
Other fuels combustion	0.2	0.1	5.6	0.9	0.8
Waste burning and incineration	0.2	0.1	0.3	0.0	0.4
<u>Off-Highway Mobile Sources</u>					
Farm and construction equipment	0.1	0.4	2.0	0.2	2.8
Ships, boats and locomotives	0.2	0.5	1.6	1.8	0.5
Pleasure boats	0.0	2.9	0.8	0.1	14.2
<u>Aircraft</u>					
Commercial aircraft	0.0	0.0	0.0	0.0	0.0
Military	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.2	0.1	0.0	4.1

Table VIII-3
Inventory of Air Pollutant Emissions
for Contra Costa County
(con.)

<u>SOURCE</u>	<u>Part</u>	<u>EMISSION IN TONS/DAY</u>			
		<u>ROG</u>	<u>NO_x</u>	<u>SO₂</u>	<u>CO</u>
<u>Motor Vehicles</u>					
Cars and light duty trucks	2.6	29.9	19.6	0.6	210.0
Medium and heavy duty gas. trucks	0.9	9.9	8.0	0.3	92.3
Diesel trucks and buses	1.4	1.5	8.7	1.4	3.8
Motorcycles	0.0	0.7	0.1	0.0	2.0
<u>Miscellaneous Emission Sources</u>					
Unplanned fires	0.1	0.1	0.0	0.0	0.9
Entrained road dust	53.2	0.0	0.0	0.0	0.0
Bio degeneration	0.0	1.3	0.0	0.0	0.0
Consumer solvent usage	0.0	6.0	0.0	0.0	0.0
Pesticides usage	0.0	0.6	0.0	0.0	0.0
Grand Total	94.6	114.5	124.2	53.3	405.7

PART = Particulates
 ROG = Reactive Organic Gases (Hydrocarbons)
 NO_x = Oxides of Nitrogen
 SO₂ = Sulfur Dioxide
 CO₂ = Carbon Monoxide

Figure VIII-5 shows the frequency of wind direction and average wind speed by direction for four locations within or near Contra Costa County. Together with the pattern of pollutant emissions, the ventilation characteristics of the county determine the pattern of air quality within the county.

The Bay Area Air Quality Management District operates a total of seven air monitoring sites within the county. Some of the monitoring sites measure multiple pollutants, some measure only a single pollutant. Shown in Figure VIII-5 is a summary of air quality data for four locations in the county for the pollutants ozone and carbon monoxide. Data on particulate matter concentrations are shown for the two locations where that pollutant is monitored. Concentrations of other pollutants such as sulfur dioxide, nitrogen dioxide, lead and hydrogen sulfide are also monitored regularly in the county, but no violations of any state or federal standards have been recorded for these pollutants.

The western portions of the county show a very strong influence of winds through the Golden Gate. The prevailing wind directions at Berkeley and San Pablo reflect the direction to the Golden Gate: west at Berkeley and southwest at San Pablo. Ventilation in this area is very good, winds are persistent and strong and calms are relatively infrequent. Although heavily urbanized, this portion of the county has very good air quality due to the good ventilation characteristics, cool temperatures and lack of upwind sources of pollutants.

The wind data for the inland Diablo-San Ramon Valley shows a strong influence of terrain on wind. Winds are channeled by terrain, and the area is very sheltered, with relatively low average wind speeds and a very high frequency of calm conditions. The potential for air pollution in this area is high because of reduced ventilation and warm temperatures which promote the formation of ozone. This area is also downwind from the highly urbanized areas of western Contra Costa and Alameda counties. As a result, ozone levels exceed the federal ambient air quality standard a few days each year. The standard for carbon monoxide is not exceeded, but the state PM-10 standard is exceeded several days per year.

The northern portions of the county from the Carquinez Straits eastward along the Sacramento River have good ventilation characteristics. The area is exposed to winds both from the west and east, and terrain provides little protection from the wind. Average windspeeds as measured in Pittsburg are relatively high and calm conditions are quite infrequent. This area contains a large portion of the industrial sources of pollutants within the county, and is located downwind of both the greater Bay Area and the Diablo Valley. As a result ozone levels exceed both the state and federal standards.

The eastern portions of the county are generally well ventilated by winds flowing through the Carquinez Straits and Delta. Terrain does not restrict ventilation, but temperatures are quite warm, promoting the formation of ozone. This portion of the county is very lightly urbanized, but ozone levels at Bethel Island indicate that violations of the state ozone standard occur. This is primarily due to the area's location downwind of the greater Bay Area.

Implementation Measures

Development Review Process

- 8-ci. Review major development applications for consistency with regional air quality plan assumptions.
- 8-cj. Review major development applications to ensure that buffer zones are provided between major air pollution sources (freeways, industry, etc.) or sources of hazardous pollutants and sensitive receptors such as hospitals, convalescent homes and residences.
- 8-ck. Discourage development that encourages long distance commuting, adversely affects the desired jobs/housing balance, or is entirely auto-dependent.
- 8-cl. Review proposed development to encourage maximum use of bicycle, pedestrian and transit modes of transportation.

Intergovernmental Coordination

- 8-cm. Support efforts at the state and regional level to enact legislation providing for stricter controls on mobile, stationary and area sources of air pollutants.
- 8-cn. Cooperate with the Association of Bay Area Governments (ABAG), Bay Area Air Quality Management District (BAAQMD), and Metropolitan Transportation Commission (MTC) in future regional air quality planning efforts.

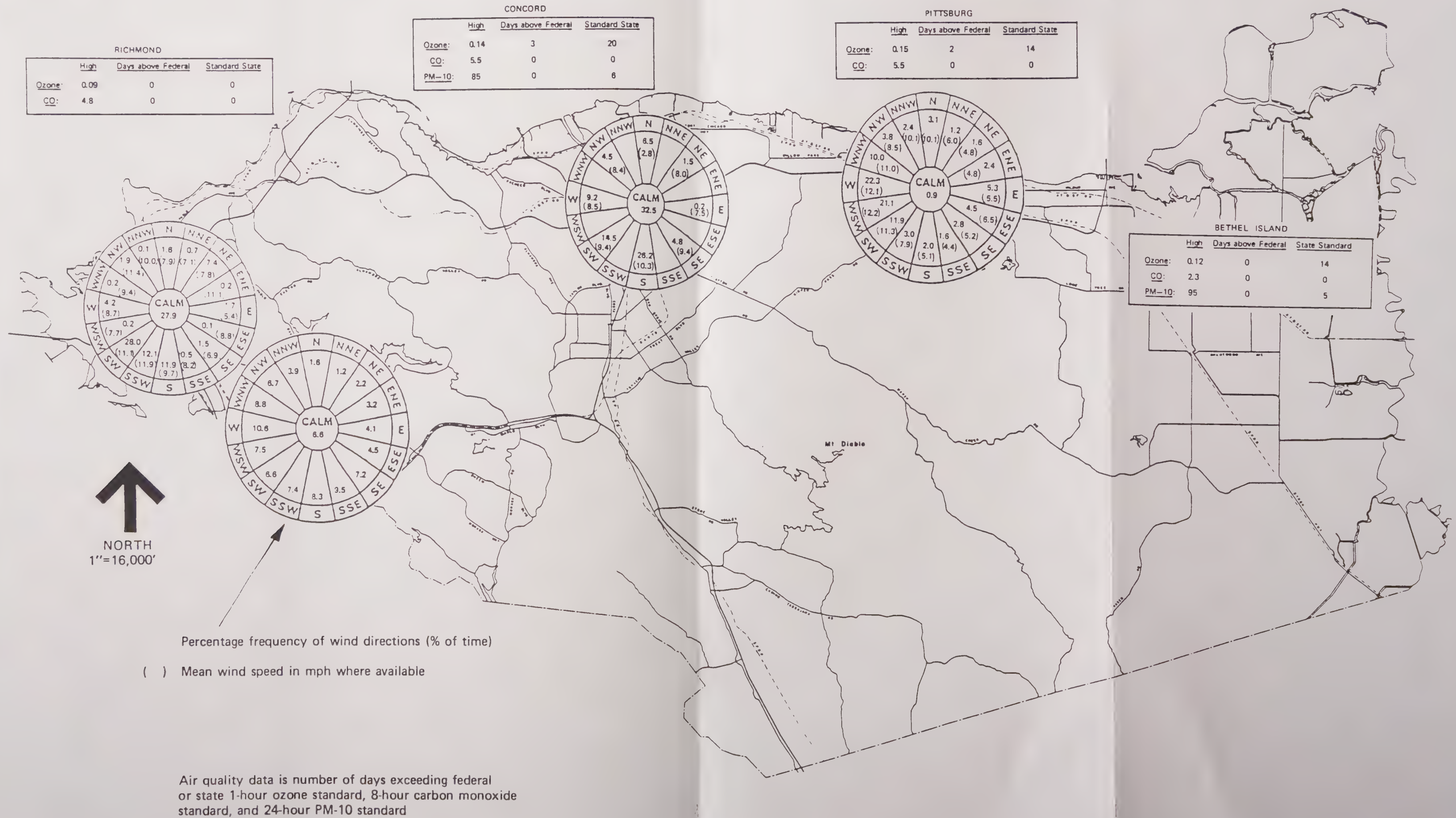
Scenic Resources

Introduction

Contra Costa County is perceived by many as a desirable place to live and work. A major component in that perception is the scenic vistas which are available throughout the county. While there are many localized scenic features in the county, there are two main resources which are treated in this section: scenic ridges, hillsides, and rock outcroppings; and the San Francisco Bay/Delta estuary system.

Throughout much of Contra Costa County, there are significant topographic variations in the landscape. The largest and most prominent of these hills form the backdrop for much of the developed portions of the area. The views of these major ridgelines help to reinforce the rural feeling of life in this rapidly growing county. These major ridges provide an important balance to the development that is occurring now and that is planned for the future.

FIG. VIII - 5 VENTILATION CHARACTERISTICS
AND 1987 AIR QUALITY SUMMARIES



Individual home sites or housing tracts are sometimes constructed on ridge tops in such a way that the scenic views from the site are superb, but the view of the ridge to all others, including other property owners, is significantly worsened. This can occur if the proposed structures are poorly placed or if the accompanying landscaping is completely unrelated to the natural setting of the surrounding properties. In addition, other development such as roads, power lines and storage tanks can degrade the scenic quality of an area if they are not carefully designed, located and landscaped.

Properties with scenic resources which are already designated for open space use should be protected through strict land regulations and, on occasion, through acquisition.

For scenic areas that are planned for some amount of development, the application review process shall consider the feasibility of preserving or protecting the scenic qualities of the site. The County planning agency shall be responsible for determining the extent and practicality of preserving such resources. The preparation of environmental impact reports can often help to analyze the significance of previously unidentified opportunities. Whenever it is determined to be feasible scenic features should be protected and maintained, either through land dedication to a public agency or the granting of scenic easements.

On the other hand, there are man-made facilities, such as non-conforming signs and overhead utility lines, which are unattractive and should be eliminated or abated to enhance the scenic qualities of specific areas in the county.

The other major scenic resource of Contra Costa County is the extensive water and delta system of San Francisco, San Pablo, and Suisun Bays. The bays extend along the entire western and northern perimeter of the County. This waterway system provides a pleasant contrast to the land forms of the area. Where the water reaches the shoreline, a mix of land uses occur: saltmarshes, railroad tracks, industrial activities, housing and parkland. All add to the diversity and interest of the shoreline.

Appropriate land uses for the shoreline areas are indicated on the Land Use Element map. All new uses along the shoreline should be reviewed for their impact on the visual and scenic aspects of the bay. Efforts should be undertaken to require quality design. The Scenic Waterways designation on the Scenic Resources map below applies to the waterway and its shoreline; the intent of the designation is to draw attention to its scenic character for consideration when reviewing projects.

Goals

- 8-Z. To preserve and protect areas of identified high scenic value, where practical and in accordance with the Land Use Element map.
- 8-AA. To protect major scenic ridges, to the extent practical, from structures, roadways, or other activities which would harm their scenic qualities.

- 8-AB. To preserve the scenic qualities of the San Francisco Bay/Delta estuary system and the Sacramento-San Joaquin River/Delta shoreline.

Policies

- 8-91. In areas designated for urban development, the principles outlined in below shall be strictly applied to development proposals.
- 8-92. High quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damages, and damages to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes over 25% are generally not desirable for conventional cut-and-fill pad development.
- 8-93. In order to conserve the scenic beauty of the county, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances have occurred. Public and private projects shall be designed to minimize damages to significant trees and other visual landmarks.
- 8-94. Providing public facilities for outdoor recreation should remain an important land use objective in the county, as a method of promoting high scenic quality, for air quality maintenance, and to enhance outdoor recreation opportunities of all residents.
- 8-95. Extreme topographic modification, such as filling in canyons or removing hilltops, shall be avoided. Clustering and planned unit development approaches to development shall be encouraged. All future development plans, whether large or small scale, shall be based on identifying safe and suitable sites for buildings, roads and driveways. Exemptions to this policy are appropriate for mining, landfill, and public projects in open space areas.
- 8-96. In areas along major scenic ridges which are designated for open space use, the principles outlined in Policy 8-100 through Policy 8-106 shall apply.
- 8-97. New water tanks that would harm the visual quality of a scenic ridge shall be buried, camouflaged or screened to mitigate their impacts.
- 8-98. New power lines shall be located parallel to existing lines in order to minimize their visual impact.
- 8-99. The construction of new structures on the top of major scenic ridges or within 50 feet of the ridgeline shall be discouraged.
- 8-100. When development is permitted to occur on hillsides, structures shall be located in a manner which is sensitive to available natural resources and constraints.

- 8-101. Hilltops, ridges, rock outcroppings, mature stands of trees, and other natural features shall be considered for preservation, at the time that any development applications are reviewed.
- 8-102. Any new development shall be ~~required~~ encouraged to generally conform with natural contours to avoid excessive grading.
- 8-103. All new land uses which are to be located below a major scenic ridge shall be reviewed with an emphasis on protecting the visual qualities of the ridge.
- 8-104. The involvement of public interest groups shall be encouraged when identifying, acquiring, and maintaining those areas of unique visual quality in the county.
- 8-105. The appearance of the county shall be improved by eliminating negative features such as non-conforming signs and overhead utility lines, and by encouraging aesthetically designed facilities with adequate setbacks and landscaping.
- 8-106. Maintenance of the scenic waterways of the county shall be ensured through public protection of the marshes and riparian vegetation along the shorelines and delta levees, as otherwise specified in this plan.
- 8-107. Tule islands and levee remnants within the county shall be restricted from new development.

Map of Resource Areas

Figure VIII-6 identifies the major scenic resources, including major ridges and scenic waterways, in the county which should be considered when evaluating nearby development proposals.

The county is endowed with many smaller, localized scenic resources such as isolated hilltops, rock outcroppings, mature stands of trees, lakes, reservoirs and other natural features. These smaller resource areas are not identified on the map, but they should be reviewed on a case-by-case basis to determine their visual quality. All of these scenic resources should be treated as aesthetic opportunities which should be incorporated into the design of any new development.

Implementation Measures

- 8-co. Prepare specific plans and/or adopt an ordinance which would protect the major scenic ridgelines not already under public ~~protection~~ ownership.
- 8-cp. Require Environmental Impact Reports to be prepared for any development projects which would have the potential to degrade the scenic qualities of major significant ridges in the county or the bay and delta shoreline.

Historic and Cultural Resources

Introduction

Northern California has been occupied for at least the last 10,000 years. The early inhabitants have been identified as the Paleo Indians who were very nomadic, using primarily large pointed tools for hunting and collecting seafood. It is assumed that the Bay Area was inhabited from 5,000 to 10,000 BP (before present), however, no sites have been identified.

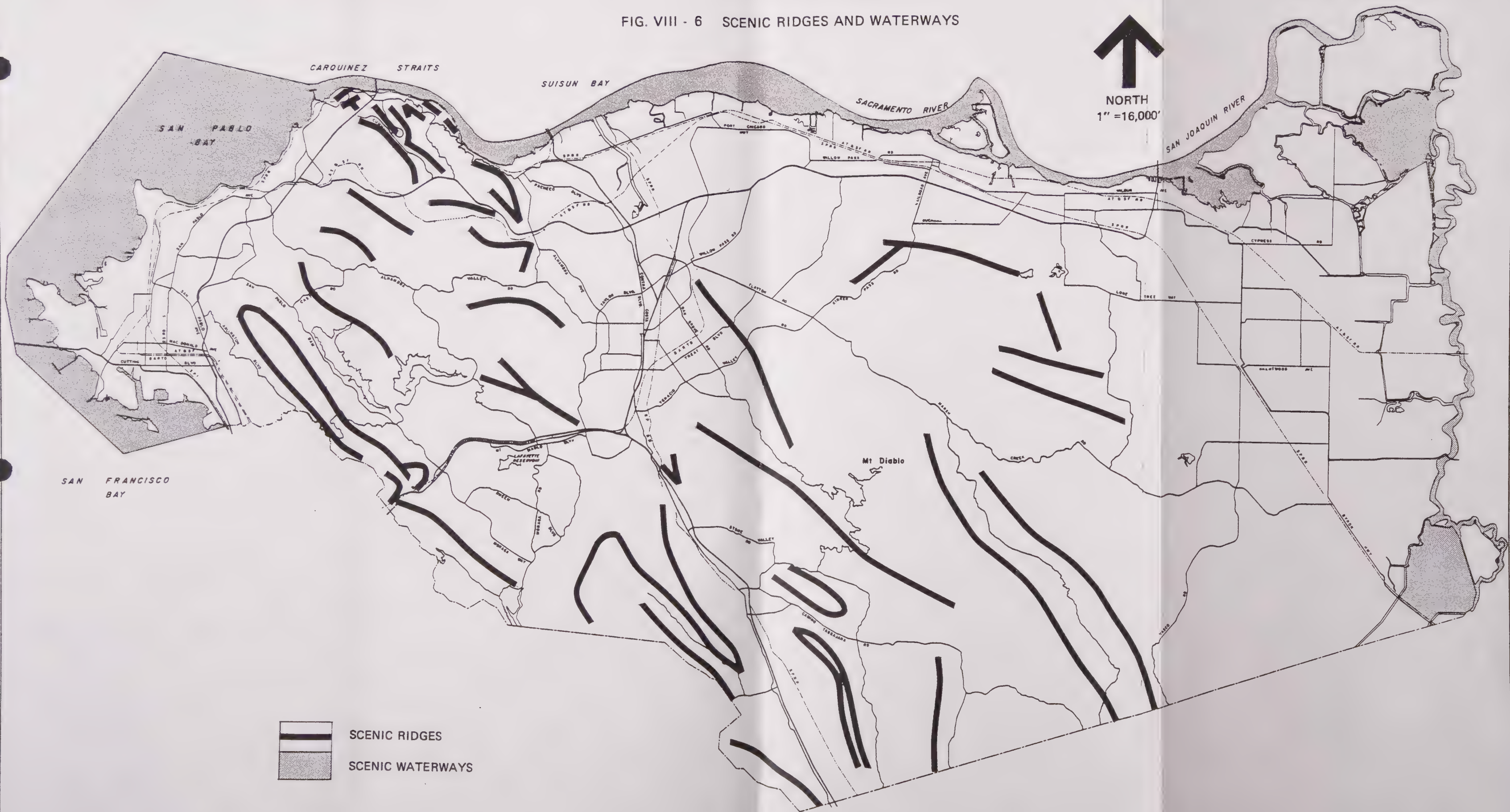
With the sea level stabilizing, the Bay and Delta were substantially formed. The subsistence pattern of the early inhabitants shifted with emphasis placed on acorn processing and hunting. Trade increased and tools and ornaments were more abundant as well as refined. Between 2,000 and 5,000 BP, cultural patterns were established in large villages along the shoreline and inland permanent streams throughout the Bay Area. The population grew rapidly and a complex society developed.

The beginning of the cultures that were in place at contact with the Spanish was approximately 1500 B.P. This period saw the continuation of the growth of economic specialization and the introduction of the bow and arrow. The three groups that inhabited Contra Costa County, the Coastanoan (Ohlone), Bay Miwok and the Northern Valley Yokuts, established their territorial boundaries. Prehistoric evidence indicates that perhaps the Yokuts were the last to arrive in the Bay Area.

The Coastanoans inhabited the western hills, plains and the Bayshore from Carquinez south to Salinas. All of the village sites were associated with a permanent source of fresh water. Many were at the mouth of streams along the Bayshore, but a number of villages were established inland along permanent streams at the base of the hills at the 50 to 150 meter elevation, as evidenced by the many sites which have been identified. Special use and seasonal use sites were established throughout the Coastanoan territory, often in association with rock outcrops or abundant food sources.

The Bay Miwok controlled the western slopes of the Diablo range, the inland valleys and the northern coastal plains. Their largest villages were located in the San Ramon Valley. The Northern Valley Yokuts controlled the eastern slopes of the Diablo range to the San Joaquin River. Their primary villages were along the San Joaquin River with only scattered use of the eastern plains and smaller secondary villages in the inland valleys. In 1776 Mission Dolores was established in San Francisco. The subjugation of the Indian cultures, plagues and the subdivision of the area into ranches largely destroyed Native American lifestyles.

Historical sites and landmarks are unique reminders of the social, economic and political history of Contra Costa County and may serve as sources of private investment and places of public recreational and educational activities. There are many local historical societies and organizations within the county which have been organized to preserve sites, structures and natural features which exemplify aspects of the history of a particular area of the county or of the county as a whole. These groups play an active role in increasing the level of appreciation and awareness of the many historical resources which the county possesses.



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Many historical structures in the county are also listed on the National Register of Historic Places as well as with the State of California Office of Historic Preservation. Many communities have also established architectural standards or forms of regulation or controls such as zoning which require preservation of historical structures and landmarks during the development process.

Goals

- 8-AC. To identify and preserve important archaeological and historic resources within the county.

Policies

- 8-108. Areas which have identifiable and important archeologic or historic significance shall be preserved for such uses, preferably in public ownership.
- 8-109. Buildings or structures that have visual merit and historic value shall be protected.
- 8-110. Development surrounding areas of historic significance shall have compatible and high quality design in order to protect and enhance the historic quality of the area.
- 8-111. Within the Southeast County area, applicants for subdivision or for land use permits to allow non-residential uses shall provide information to the County on the nature and extent of the archeological resources that exist in the area. The County Planning Agency shall be responsible for determining the balance between the multiple use of the land with the protection of resources.

Map of Resource Areas

Archaeological Resources

No systematic archaeological survey has been conducted for Contra Costa County. There are, however, approximately 600 archaeological sites within the County which have been recorded with the Archaeological Inventory, Northwest Information Center at Sonoma State University. Identification of these archaeological sites is largely the result of sporadic surveys conducted in association with development proposals. Large areas of the county that have been retained in agriculture have never been surveyed and may yield prehistoric settlement patterns yet unknown.

An archaeological sensitivity map has been prepared (see Figure VIII-7). This map conceptually illustrates areas of varying archaeological sensitivity within the county and is intended to be used as a planning tool for determining future survey requirements imposed upon development applications.

The sensitivity map has been divided into 5 categories: extremely sensitive (known sites), highly sensitive (high probability for potential sites), medium sensitivity (possible sites), moderately sensitive (higher probability of subsurface resources, due to deposition), and low sensitivity (mainly the ridgetops). These categories and the reasons for designation are described below.

As indicated previously, over 600 sites have been identified in Contra Costa County and wherever these sites have been located, an extremely sensitive designation has been applied. The presence of water near an ecotone was considered an area most likely to contain an archaeological site(s) and has been designated highly sensitive. This designation includes stream courses because the native groups would establish settlements or seasonal sites along permanent and seasonal streams, thus the streams provide potential prehistoric and historic resources.

Accessible areas near water were designated to have medium sensitivity. This includes the plains areas between two stream corridors. These areas were used for hunting, butchering camps, hunting blinds or food processing sites. The next level of sensitivity, identified as moderately sensitive, generally encompasses the plains and Delta area. This category is divided into two areas: an area showing surface manifestation of use and an area where indications of prehistoric use would most likely be buried. Because of the deposition that has occurred in this part of the county, subsurface monitoring should be conducted as a condition of project approval.

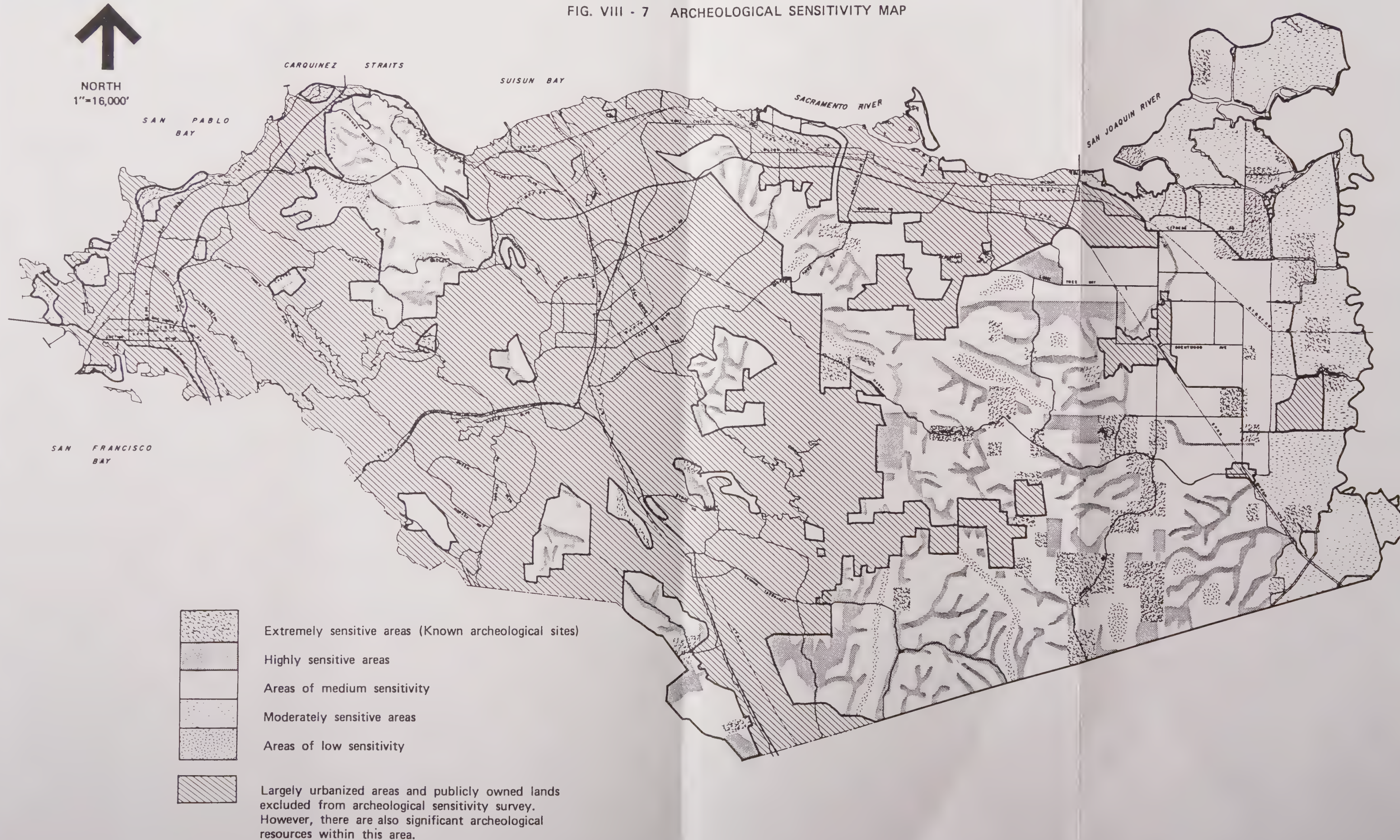
The areas designated as low sensitivity may contain special use sites and would not require as intense an archaeological reconnaissance as required with the above categories. However, as a condition of project approval for projects proposed in this designated area, a reconnaissance should be conducted. This would entail an archaeologist to scan a site for outcrops, caves, quarries, etc., which may have the potential to yield further information.

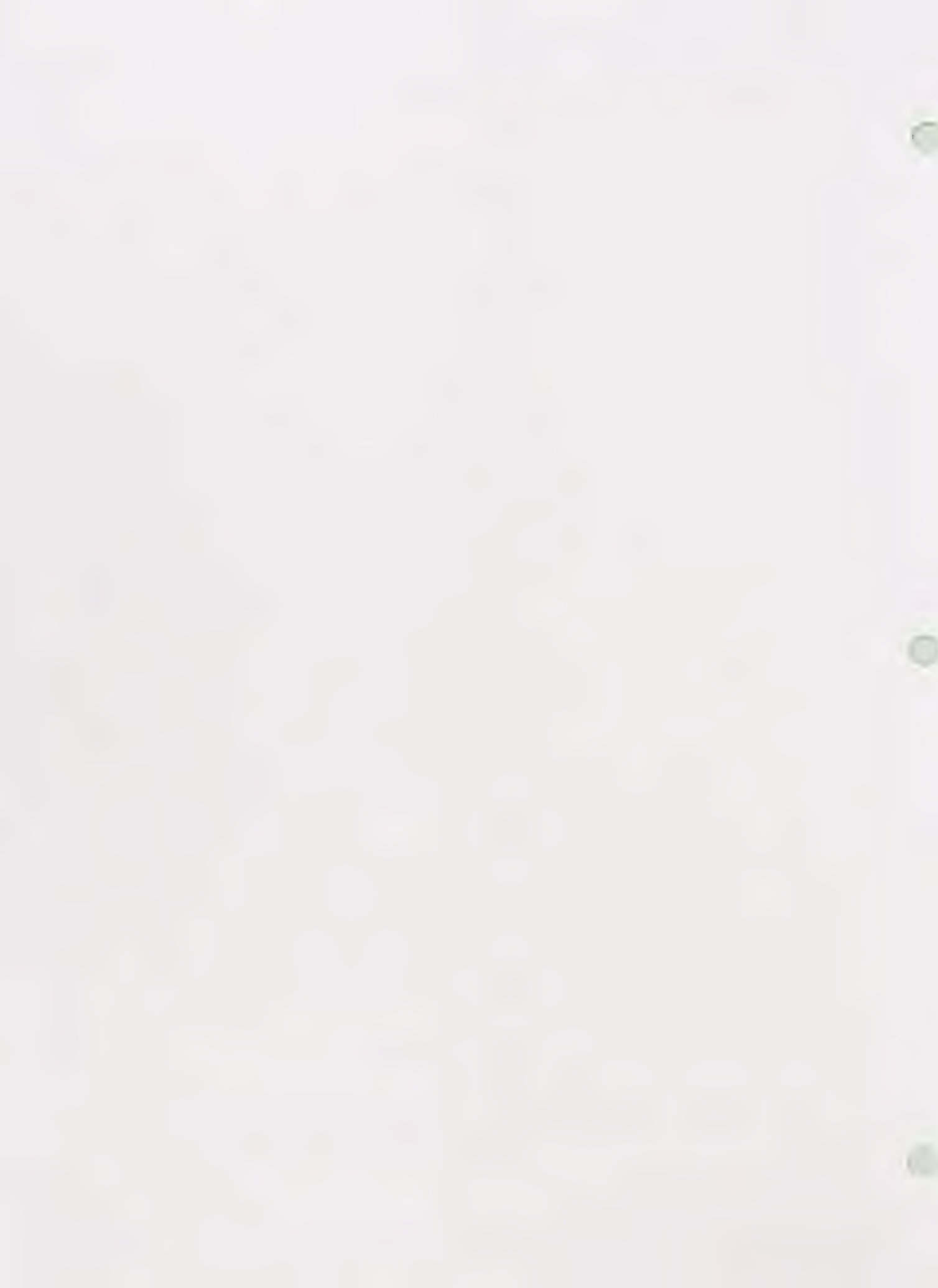
Substantial areas within Southeast County have been identified by various governmental agencies and knowledgeable individuals as containing both unique biological habitats, scenic values, and significant archeological resources. Specifically, on privately owned land east of Vasco Road caves have been created by the wind in sandstone cliffs overlooking the San Joaquin Valley. These caves were used by some of the county's earliest inhabitants, and valuable Native American artifacts have been discovered. In particular, well-preserved petroglyphs (Indian paintings) have been discovered in the caves, as well as numerous midden in the adjacent area.

Both public and private stewardship of the resources on-site shall be considered as long as the protection is long term and guaranteed in some manner. The acquisition of lands in these areas by the County for the East Contra Costa Airport, and acquisition of watershed lands by the Contra Costa Water District, may aid in the permanent protection of some of these archeological resources.

Due to the fragile nature of some of these resources, public access to the areas should be limited or restricted in some cases. To facilitate a better understanding of the unique archeological and natural resources in the area a detailed inventory should be prepared. Efforts to secure financing for such an effort should be explored upon adoption of this plan.

FIG. VIII - 7 ARCHEOLOGICAL SENSITIVITY MAP





Historic Resources

An historic resources inventory was compiled in 1976 by the County in coordination with the local historical societies. While the historic resources inventory is not considered to be a comprehensive listing of the county's historic resources, it is a major starting point for the protection of historic resources.

Implementation Measures

Development Review Process

- 8-cq. Develop an archaeological sensitivity map to be used by staff in the environmental review process for discretionary permits to determine potential impacts upon potential cultural resources.
- 8-cr. As a condition of approval of discretionary permits, include a procedure to be followed in the event that archaeological resources are encountered during development or construction.

Ordinance Revisions

- 8-cs. Review existing County ordinances and guidelines and make amendments as necessary to ensure that they provide adequate safeguards for archeologic and historic resources.
- 8-ct. Develop design guidelines for areas adjacent to or within scenic corridors or historic sites.

Other Programs

- 8-cu. Promote the use of the State of California Historic Building Code to protect historic sites in the county.
- 8-cv. Encourage owners of eligible historic properties to apply for State and Federal registration of these sites and to participate in tax incentive programs for historic restoration.
- 8-cw. Seek coordination and cooperation with Federal, State, and local governments, and with private and non-profit organizations, to establish funding sources to preserve, restore, and enhance unique historic sites. Such funding sources may be used to acquire and preserve sites or to acquire easements over sites and building facades.
- 8-cx. Identify funding mechanisms, including funding from the County to the extent possible, to support programs to preserve, restore, and enhance unique historic sites.

IX. SAFETY ELEMENT

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CHAPTER IX

SAFETY ELEMENT

Authority and Purpose

The requirement for this element is found in Government Code Section 65302, which requires a Safety Element "for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides, subsidence and other geologic hazards known to the legislative body; flooding; and wild land and urban fires. The Safety Element shall include mapping of known and other geologic hazards."

The purpose of the Safety Element of the General Plan is to introduce safety considerations into the planning process in order to reduce loss of life, injuries, damage to property, and economic and social dislocation resulting from fire, geologic occurrences and hazardous land use relationships. This is accomplished through analysis of the hazards, an evaluation of the risk to life and property, and policies for hazard mitigation. A secondary purpose of the element is to provide the basis for planning and coordination of hazard mitigation with other divisions of County government, the incorporated cities, and State and Federal agencies in order to insure that public projects, plans and programs of other government agencies reflect the public safety needs of all Contra Costa County residents.

This chapter of the General Plan is divided into six separate sections, each dealing with a specific natural hazard. The six sections present background information, policies, maps, and implementation measures regarding:

- o seismic hazards (earthquakes and faults, and the effects of strong earthquakes, such as liquefaction);
- o landslides and associated hazards;
- o flooding hazards, including the impacts of the "greenhouse effect," subsidence, and dam or levee failure;
- o hazardous land uses, including the transport and storage of hazardous materials, pipelines, etc.;
- o dangers to water quality and public water supplies;
- and
- o disaster planning and the provision of public protection services.

The goals and policies contained in this element are intended to guide planning for public and private projects that are subject to approval of the County planning agency, or review by County staff although they may be under the jurisdiction of other public agencies operating in the County.

The Safety Element does not stand alone; it is one of several components of the General Plan. Its goals, policies and implementation measures must be coordinated with the other elements of the General Plan. The Safety Element has been expected to have its primary impact on land use policies and hence be coordinated with the Land Use Element. Safety decisions may afford opportunities, coordinated with the Open Space/Conservation and Public Facilities/Services Elements, and additional justification for lowering density in conjunction with land use decisions, based partly on seismic and landslide risk. The Safety Element is related to the Housing, Circulation and Transportation, and Public Facilities/Utilities Elements and provides details on safety issues to insure high public safety levels.

Acceptable Risks and Priorities for Action

The concept of public safety expressed in this element, and the proposed policies and programs to achieve a suitable degree of public protection, are based on the following assumptions:

- o Hazards are an unavoidable aspect of life. Not all hazards can be eliminated, nor can every degree of risk be eliminated for any specific hazard.
- o Public policy and action are appropriate to mitigate against hazards which have a high degree of risk to the general public or to a large part of the population, hazards which may have a relatively low risk of occurrence but which would be considered disasters should the event occur, and hazards which are not considered to have a disaster potential but which are persistent safety problems with a history of occurring in the County.
- o Through the dissemination of information and public discussion satisfactory judgments can be made as to the levels of monetary, environmental and social costs appropriate to mitigate hazards to public safety.

The policies of this element are not intended to remove all risks associated with each specific hazard, but when implemented will reduce risks to life and property from certain natural and man-made events, and will lead to greater life safety in case of general disaster.

The determination of acceptable and unacceptable risk requires judgments based on weighing several factors including the nature of the hazard, the frequency, or risk, of a damaging event associated with the hazard, and the relative number of persons exposed to the risk. The degree or intensity of any specific hazard is a major consideration in public mitigation efforts. Thus, hazards with a high life-loss potential are less acceptable than hazards which primarily affect property, and hazards which could impact entire communities are less acceptable than hazards which may impact relatively few persons. For hazards to disaster "lifelines" (including water supply, emergency services, evacuation routes, and medical and mass care facilities) only a very low degree of risk is considered acceptable since these facilities and functions are critical to disaster recovery for entire communities.

Exposure to the natural hazards considered in the Element is often taken voluntarily. Persons who choose to purchase property on unstable ground or subject to wildfire and flooding are usually aware of the potential hazard. Involuntary or unrecognized risks, such as exposure to hazardous substances on the other hand, are taken unknowingly. Voluntarily taken risks are not necessarily acceptable from the public point of view because property owners have expectations that grading and building regulations, fire services, and flood control works will provide a significant degree of risk reduction. The greater capital cost of public facilities in hazardous areas, plus higher maintenance costs, represents a disproportionate share of tax revenues for hazard mitigation. Thus, there is a public interest in the conservation and development of areas subject to natural hazards and in alternative means of providing for public safety.

Seismicity

Introduction

Before proceeding with a discussion of the County's policies regarding seismic hazards, it is necessary to discuss the characteristics and effects of earthquakes and the geology of Contra Costa County so that users have a common basis for understanding the natural processes addressed in this portion of the Safety Element.

Earthquakes are sudden releases of strain energy stored in the earth's bedrock. Energy can be stored in the earth's crust because the crust is more or less elastic. Under pressure it can be permanently distorted or can store the energy for later release. The release can be slow, in the form of fault creep, or rapid, as an earthquake. Both types of energy release, but especially a large, rapid earthquake, can be destructive.

The great majority of earthquakes are not dangerous to life or property either because they occur in sparsely populated areas or because they are small earthquakes which release relatively small amounts of energy. However, where urban areas are located in regions of high seismicity, damaging earthquakes are expectable if not predictable events. Seismic risk is assumed by every occupant and developer in Contra Costa County because the County is within an area of high seismicity; the San Francisco Bay Region has been impacted by more than ten severe earthquakes during historic time.

The major effects of earthquakes are ground shaking and ground failure. Severe earthquakes are characteristically accompanied by surface faulting and less commonly by tsunamis and seiches (forms of tidal waves; these terms are described further in the "Flood Hazards" section of this chapter). Flooding may also be triggered by dam or levee failure, or by seismically induced settlement or subsidence. All of the geologic effects are capable of causing property damage and, more importantly, risks to life and safety of persons.

California is located in one of the most seismically active areas of the earth because the state is located on the boundary between the crustal plate underlying the Pacific Ocean and the one forming the American continent. The American plate, as the latter is called, is "drifting" southwesterly relative to the Pacific plate and being forced to override the Pacific plate. The main line of contact between the two plates is the San Andreas fault system. Simply stated, as these plates shove and grind against one another, movement occurs on the San Andreas fault, or a fault parallel to it, and California has earthquakes.

A **fault** is a fracture in the earth's crust along which the rocks on opposite sides have moved relative to each other. All active faults have a high probability of future movement. With regard to planning and development two aspects of fault displacement should be considered: (a) the effects that sudden movement along faults may have on structures built across their traces, and (b) the relatively slow effects of fault creep on structures built across their traces.

Fault displacement involves forces so great that the only means of limiting damage to man-made structures is to avoid the traces of active faults. Any movement beneath a structure, even on the order of an inch or two, could have catastrophic effects on the structure and its service lines.

Beginning the instant an earthquake is triggered, a series of events which can have serious consequences for people and property is set into motion. These involve interactions between seismic forces on one hand and natural features and man-made structures on the other.

Energy release events on an active fault may alternate from one trace to another, and movement on a master fault could trigger adjustments on minor, subsidiary faults. Because of these factors, fault traces which intersect or parallel known active faults warrant special consideration during project review.

For the purpose of this Safety Element, earthquakes are to be classified according to the descriptive names listed in Table IX-1.

Earthquake planning and seismic review often use a set of descriptions of predicted earthquake capabilities called "maximum credible earthquake" and "maximum probable earthquake." The maximum credible earthquake is the maximum earthquake that appears capable of occurring. The maximum probable earthquake is the maximum earthquake believed likely to occur during a 100 year interval. The maximum credible and maximum probable earthquakes for various faults in the County are defined later in this chapter and further explained in the appendix.

The overall strength of an earthquake is its most important characteristic but not the only characteristic needed for seismic safety planning or construction design. Other important attributes include an earthquake's duration, its related number of significant stress cycles and its accelerations. Structures capable of withstanding more powerful earthquakes can fail in a less severe earthquake of long duration or due to especially high local accelerations.

TABLE IX-1
Earthquake Size Descriptions

Descriptive Title	Richter * Magnitude	Intensity Effects
Minor Earthquake	1 - 3.9	Only observed instrumentally or felt only near the epicenter. Modified Mercalli Scale, intensity IV or less.
Small Earthquake	4 - 5.9	Surface fault movement is small or does not occur. Felt at distances of up to 20 to 30 miles from epicenter. May cause damage (Modified Mercalli Scale, VII) in small area.
Moderate earthquake	6 - 6.9	Moderate to severe earthquake range. Fault rupture probable; landslides, liquefaction and ground failure triggered by shock waves.
Major earthquake	7 - 7.9	
Great earthquake	8 - 8+	Damage extends over a broad area, depending on magnitude and other factors. Maximum intensity ranges from VIII to XII on the Modified Mercalli Scale.

* Note: See the appendix for a discussion of the Richter and Modified Mercalli scale classification systems.

Source: Compiled by Contra Costa County Community Development Department

In order to understand the fault system in Contra Costa, where earthquakes are most likely to occur, a brief discussion of the local geology is necessary. Figure IX-1 illustrates the generalized geology of the County and the accompanying Table IX-2 summarizes the County's "geologic column" and geologic time scale.

The geology of Contra Costa County is dominated by several northwest trending fault systems which divide the County into large blocks of rock. For example, the Briones Hills are bounded by the Hayward fault on the west and elements of the Franklin-Castroas fault system on the east. Within a particular block the rock sequence consists of (1) a basement complex of broken and jumbled pre-Tertiary sedimentary, igneous and metamorphic rocks; (2) a section of younger Tertiary sedimentary rocks and some volcanic rocks (flows and tuffs) which locally intertongue with and overlie the sedimentary section; and (3) surficial deposits including stream alluvium, colluvium (slopewash deposits at the foot of steeper hillslopes), slides, alluvial fans, and Bay Plain deposits. The character of each of these categories of rocks are summarized in Table IX-2.

From the perspective of seismic safety planning the older, coarser, and well-drained materials tend to be stable during earthquakes, while younger, fine-grained and water-saturated deposits tend to be less stable. Colluvium is often marginally stable to unstable. A disproportionate share of landslides originate in colluvium.

Faults are seldom single cracks but typically are a series of subparallel or en-echelon breaks that comprise zones. These breaks form networks composed of major and minor faults. A fault having recorded movement, or one which shows evidence of geologically recent displacement (within about the last 10,000 years), is regarded as "active" and is more likely to generate a future earthquake than a fault which shows no signs of recent movement.

Figure IX-2 shows the earthquake faults that have been mapped in the County and categorizes their recent activity. Further technical information is discussed in the appendix. Table IX-3 summarizes other available data on inferred active faults affecting Contra Costa County.

Along with the criteria for fault activity, the last time of faulting, based on geologic evidence, is used to assess fault activity. The historic record is so short, and earthquakes are so scattered, that they are used only as the surest indicator of fault activity.

The major State legislation regarding earthquake fault zones is the Alquist-Priolo Special Studies Zones Act. The purpose of the Act is to regulate development near active faults so as to mitigate the hazard of surface fault rupture. The law has resulted in preparation of maps delineating Special Studies Zones of appropriate width to include all potentially and recently active traces of the San Andreas, Hayward, Calaveras and San Jacinto faults.

In the context of geologic evidence for activity, those faults which have been active during the Holocene period, approximately the last 10,000 years, are considered to be active faults, and those faults which have been active during the Quaternary period, approximately the last 3 million years, are considered to be potentially active faults. This serves to differentiate faults for which sufficient evidence of recent activity has been noted to explicitly include them

FIG. IX - 1 GENERALIZED GEOLOGY OF CONTRA COSTA COUNTY

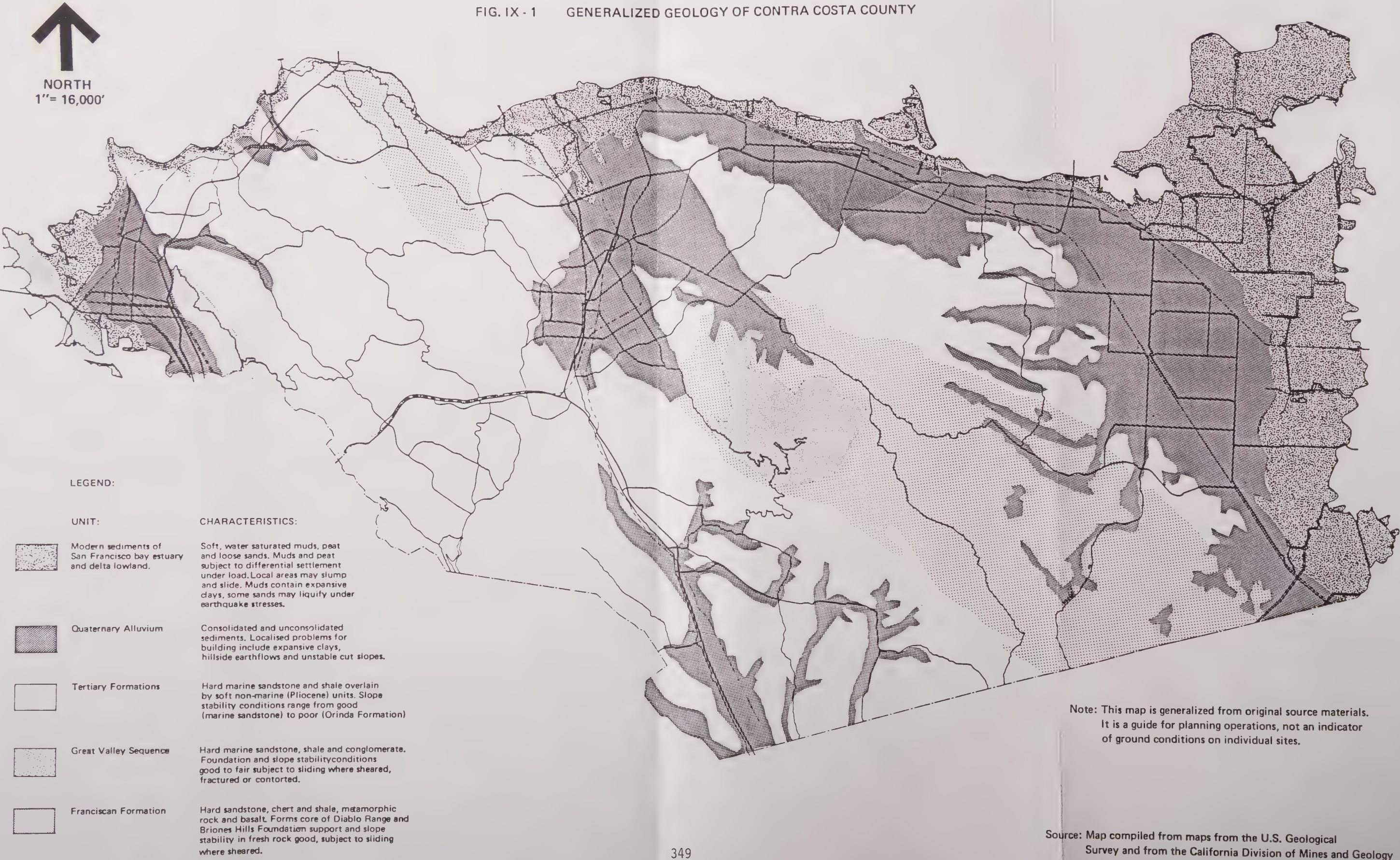


TABLE IX-2
GEOLOGIC TIME SCALE
GENERALIZED STRATIGRAPHIC SECTION
AND LITHOLOGIC CHARACTERISTICS

Generalized Stratigraphic Section
Geologic Age (Absolute Age*)

General Lithologic Description

Quaternary			
Holocene & Pleistocene (0-2)		Alluvium	Includes all types of alluvial deposits. In Central Coast Range it is separated from Contra Costa Group by an angular unconformity.
Tertiary			
Pliocene (2-5)	Contra Costa Group	Bald Peak Basalt Siesta Formation Moraga Formation Orinda Formation	Conglomerate, sandstone, siltstone with minor amounts of limestone and tuff; rapid facies changes. Some basalt and andesite (volcanic) flows. Clastics are semi-consolidated and contain montmorillonite clay. Topographic form highly variable.
Miocene (5-24)	San Pablo Group	Neroly Sandstone Cierbo Sandstone Briones Sandstone	Predominantly marine sandstone with interbeds of shale, siltstone and minor conglomerate. Upper part includes some non-marine beds (e.g. Diablo Formation of Weaver, 1944)
	Monterey Group	Rodeo Shale Hambre Sandstone Tice Shale Claremont shale Sobrante Sandstone	Siliceous shale and fine-grained sandstone. Some zones of rhythmically bedded chert and shale. Bituminous in places. Underlies moderately steep to steep hillsides in Briones Hills.
Oligocene (24-37)		San Ramon Formation	Tuffaceous sandstone, tuff, minor conglomerate and siltstone.
Eocene (37-58)		Markley Formation Nortonville Shale Domengine Sandstone Meganos Formation	Predominately indurated bedrock including shale, siltstone and sandstone. Montmorillonitic clay shales, unstable.
Paleocene (58-66)		Martinez Formation	Marine, Glauconite sandstone and shale. Shale similar to Eocene.

TABLE IX-2
Geologic Time Scale (continued)

Generalized Stratigraphic Section Geologic Age (Absolute Age)		General Lithologic Description
Cretaceous (66-144)	Great Valley Sequence	Great Valley Sequence: Massive beds of sandstone alternating with siltstone and shale. Minor conglomerate, limestone and lignite. Complexly folded and faulted. Crops out in Briones Hills and Diablo Range.
Cretaceous- Jurassic (In part contemporaneous with Great Valley Sequence and younger, possibly Tertiary rocks.)	Franciscan Assemblage	Franciscan: Rhythmically bedded graywacke sandstones, shale, siltstones, radiolarian chert, greenstone. Minor amounts of limestone and schist. Partially recrystallized and intruded by serpentine and associated igneous rocks. Strongly deformed.

*Units of absolute age are millions of years before present.

Modified after Radbruch (1969)

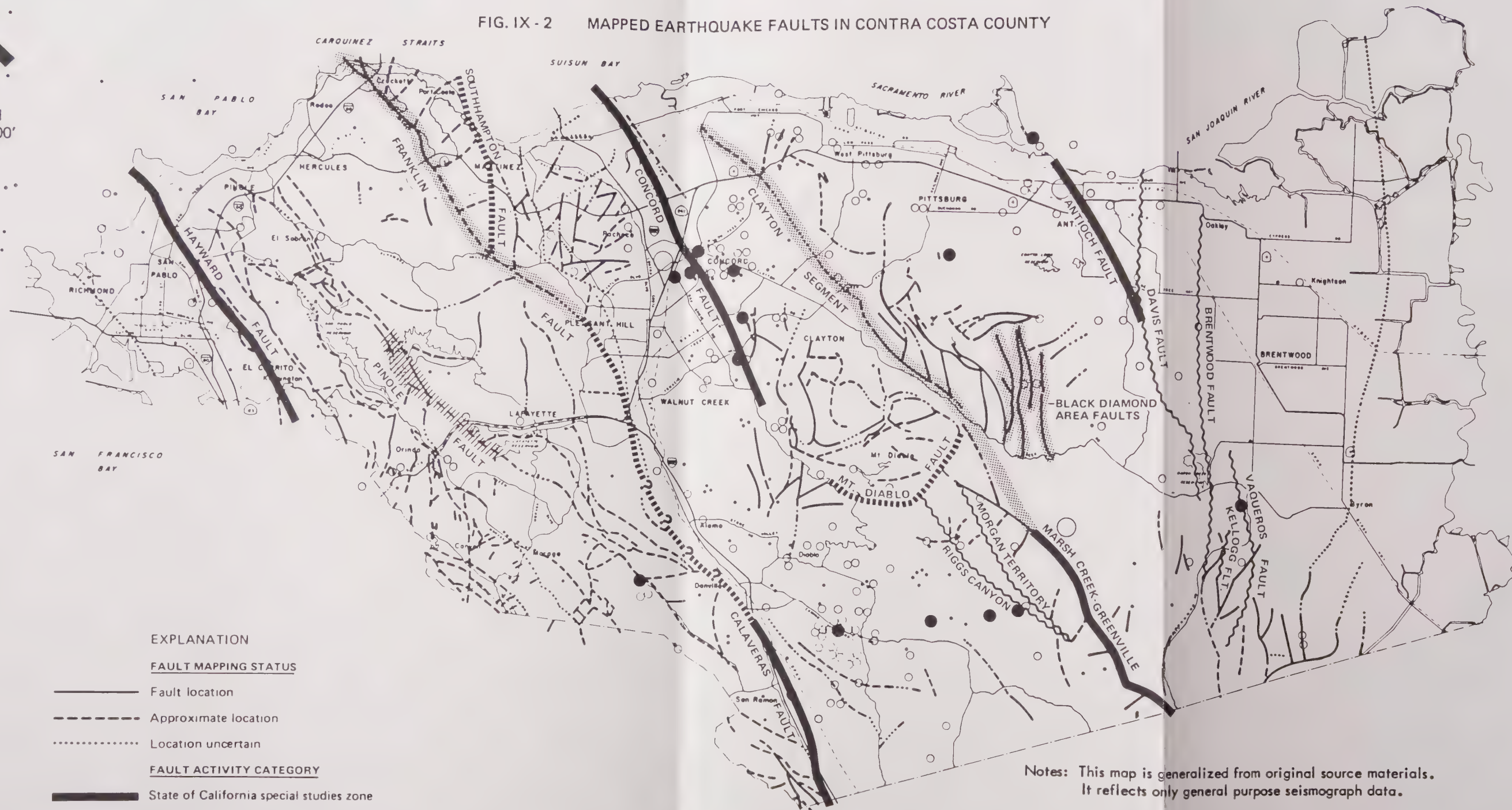
NOTE: This table is generalized from original source materials. It is not an indicator of ground conditions on individual sites.

Compiled by Contra Costa County Community Development Department.



NORTH
1"=16,000'

FIG. IX - 2 MAPPED EARTHQUAKE FAULTS IN CONTRA COSTA COUNTY



Notes: This map is generalized from original source materials. It reflects only general purpose seismograph data.

The apparent scattering of the epicenters relative to fault locations is due to instrumentation and measurement problems as well as the dip of the faults and other factors.

Prepared by the Contra Costa County Community Development Department, Contra Costa County, California.

TABLE IX-3

SUMMARY OF AVAILABLE DATA ON INFERRED ACTIVE FAULTS AFFECTING CONTRA COSTA COUNTY

Fault Name	Historic Damaging Earthquakes	Historic Surface Faulting	Known Microseismic Activity	Estimated Maximum Credible Earthquake		Maximum Probable Earthquake	
				Preferred Magnitude	From Literature	Preferred Magnitude	From Literature
San Andreas	1838, 1906	Creep and Surface Rupture	Yes	$8\frac{1}{2}$	$8.5^{(1)}$	$8\frac{1}{4}$	$8\frac{1}{4}^{(6)}$
Hayward	1836, 1868	Creep and Surface Rupture	Yes	$7\frac{1}{4}$	$7.0^{(1)}$	$6\frac{1}{2}$	$6\frac{3}{4}^{(6)}$
					$6.9^{(2)}$		
					Range 6-8, most data suggest $7 \pm \frac{1}{4}^{(3)}$		
					$7.0^{(5)}$		
					$6.8 - 7.0^{(6)}$		
					$7.6^{(7)}$		
Calaveras	1861	Surface Rupture	None in Contra Costa County	$7\frac{1}{4}$	$7.3^{(1)}$	$6\frac{1}{2}$	$6\frac{1}{2}^{(6)}$
					$6.7^{(2)}$		
					Range 6 - 8, most data suggest $7 \pm \frac{1}{4}^{(3)}$		

Table IX-3 (continued)

Fault Name	Historic Damaging Earthquakes	Historic Surface Faulting	Known Microseismic Activity	Estimated Maximum Credible Earthquake		Maximum Probable Earthquake	
				Preferred Magnitude	From Literature	Preferred Magnitude	From Literature
Calaveras (continued)					7 $\frac{1}{4}$ ⁽⁴⁾⁽⁵⁾		
					6.5 - 7.2 ⁽⁶⁾		
					7.5 ⁽⁷⁾		
Franklin	1898?	None Known	No	6 $\frac{1}{4}$	6 $\frac{1}{4}$ ⁽⁵⁾	Insufficient Data	
Concord	1955	Creep	Yes	6 $\frac{1}{2}$	6.3 ⁽¹⁾	5 3/4	5 $\frac{1}{2}$ ⁽⁶⁾
					6.0 ⁽²⁾		
					Range 6 - 8, most data suggest 7 \pm $\frac{1}{4}$ ⁽³⁾		
					6.5 ⁽⁴⁾⁽⁵⁾		
					6.1 - 6.5 ⁽⁶⁾		
					6.4 ⁽⁷⁾		

Table IX-3 (continued)

Fault Name	Historic Damaging Earthquakes	Historic Surface Faulting	Known Microseismic Activity	Estimated Maximum Credible Earthquake		Maximum Probable Earthquake	
				Preferred Magnitude	From Literature	Preferred Magnitude	From Literature
Greenville: Clayton Segment	None Known	None Known	No	$6\frac{1}{4}$	$6.25^{(4)(5)}$	$5\frac{1}{2}$	None
Greenville: Marsh Creek -	1980	Surface Rupture	Yes	$6\frac{1}{2}$	$6.5^{(4)(5)}$	$5\frac{3}{4}$	None
Greenville: Segment					$6.9^{(7)}$		
Black Diamond Area	None Known	None Known	Scattered clusters in areas near these faults	$5\frac{1}{2}$	$5\frac{1}{2}^{(4)}$	Insufficient Data	
Antioch	1889?, 1965	Reported Creep	Yes	$6\frac{1}{2}$	$6.6^{(1)}$ $5\frac{3}{4}^{(4)}$ $6.5^{(6)}$	$5\frac{3}{4}$	$5\frac{1}{2}^{(6)}$

NOTES TABLE IX-3 (continued)

References:

- (1) Wesson and Others (1975)
- (2) Herd (1979)
- (3) Slemmons and Chung (1982)
- (4) Earth Science Associates (1982)
- (5) Earth Science Associates (1983)
- (6) Woodward-Clyde Consultants (1984)
- (7) Shedlock and Others (1980)
- (8) The maximum credible earthquake is the maximum earthquake that appears capable of occurring under the presently known tectonic framework. It is a rational and believable event that is in accord with all known geologic and seismologic facts. In determining the maximum credible earthquake, little regard is given to its probability of occurrence, except that its likelihood of occurring is great enough to be of concern. It is conceivable that the maximum credible earthquake might be approached more frequently in one geologic environment than in another. (CDMG Note 43, 1975.)
- (9) The maximum probable earthquake is the maximum earthquake that is likely to occur during a 100-year interval. It is to be regarded as a probable occurrence, not as an assured event that will occur at a specific time. (CDMG Note 43, 1975).
- (10) Earthquake magnitudes are shown as either fractions or decimals as reported in the literature.

TABLE IX-4

**Approximate Probability of Occurrence of
Earthquakes on Selected Bay Area Faults
(50-Year Period)**

<u>Causative Fault</u>	<u>Magnitude</u>	<u>Approximate probability of Occurrence (over a 50-year period)</u>
San Andreas	7.0 - 8.0	Likely
	8.0 - 8.5	Intermediate
Hayward	6.0 - 7.0	Likely
	7.0 - 7.5	Intermediate
Calaveras	6.0 - 7.0	Intermediate
	7.0 - 7.5	Intermediate - Low
Concord	5.0 - 6.0	Likely
	6.0 - 7.0	Intermediate - Low
Antioch	5.0 - 6.0	Likely
	6.0 - 7.0	Intermediate - Low

Definition of Terms:

Likely: Greater than a 50% probability of occurrence.

Intermediate: A 15-50% probability of occurrence.

Low: Less than a 15% probability of occurrence.

Source: Contra Costa County Community Development Department estimates

TABLE IX-5

ESTIMATED MAXIMUM PARAMETERS FOR KNOWN FAULTS AFFECTING CONTRA COSTA COUNTY
(Based on Table IX-3)

Fault	San Andreas	Hayward	Calaveras	Concord	Clayton/Greenville	Antioch
Magnitude ⁽¹⁾	8.25 - 8.5	6.5 - 7.25	6.5 - 7.25	5.75 - 6.5	5.75 - 6.5	5.75 - 6.5
Duration of Strong Shaking ⁽²⁾ (Seconds)	25 - 37	18 - 30	18 - 30	7 - 22	7 - 22	7 - 22
Maximum Intensity ⁽³⁾ (M.M.)	IX - XI	VIII - IX	VIII - IX	VII - VIII	VII - VIII	VII - VIII
Peak Horizontal Accelerations on Rock ⁽⁴⁾						
<u>Distance from Fault in Miles</u>						
5	.50 - .55	.25 - .50	.25 - .50	.20 - .45	.20 - .45	.20 - .45
10	.45 - .50	.15 - .40	.15 - .40	.15 - .30	.15 - .30	.15 - .30
20	.25 - .30	.10 - .25	.10 - .25	.05 - .15	.05 - .15	.05 - .15
30	.20 - .25	.05 - .20	.05 - .20	.05 - .10	.05 - .10	.05 - .10
40	.15 - .20	.05 - .10	.05 - .10	<.05	<.05	<.05
50	.10 - .15	<.10	<.10	<.05	<.05	<.05

- Notes: (1) Magnitude Estimates from Table IX-3. The first listed magnitude for each fault is the maximum probable earthquake; the second is the maximum credible earthquake. The maximum probable earthquake for the San Andreas Fault is the historic 1906 earthquake.
- (2) Bracketed duration for ground motions are 0.5g within 10 miles of the fault. Estimates based on relationships developed by Bolt (1973).
- (3) Estimate based on relationships developed by Richter (1958).
- (4) Estimates based on relationships developed by Seed and Idriss (1972), Joyner and Boore (1981), Campbell (1981) and Sadigh (1983).

as known geologic hazards, distinct from those faults for which young displacement is known or suspected, and whose latest activity has not been determined, but may have been within approximately the last 10,000 years.

In addition to faults which have been classified as active or potentially active, there are others whose activity has not been clearly established by presently available information. Some of these faults are shown on Figure 2 and discussed in the appendix. Others remain to be studied.

The County has been subjected to numerous seismic events. One authority has estimated that there have been approximately sixty damaging earthquakes in the Bay Area since 1800. Almost all of these were felt in Contra Costa County, and some did extensive damage here. Some of these originated on faults located within the County and some in other parts of the region.

There is no question that the six major Bay Area earthquakes occurring since 1800 affected the County, nor that at least two of the faults that produced them run through or into the County. These earthquakes and the originating faults include the 1836 and 1868 earthquakes on the Hayward fault, and the 1861 earthquake on the Calaveras fault. Two earthquakes, in 1838 and 1906, originated on the San Andreas fault, west of the County near San Francisco or to the south, and one earthquake (with two major shocks,) which was felt and caused some damage in the County, occurred in 1872 and was centered north of Contra Costa County in the Vacaville-Winters area of Solano County. A smaller, similar earthquake, centered near Collinsville in Solano County on a fault of uncertain identity, occurred in 1889.

Figure IX-3 shows the locations for epicenters of earthquakes of Richter magnitudes as small as approximately 2.0 (which are unevenly reported because not all of them were recorded by enough stations to be located accurately), and for the period 1934-1980.

Science does not possess the capability to predict when, where, or how large the next earthquake will be. Using the available data and information, an earthquake probability estimate has been developed for Contra Costa County and is shown in Table IX-4.

Table IX-4 evaluates the likelihood that earthquakes capable of producing damage in Contra Costa County will occur on certain faults during a fifty year period. (Fifty years is a rough average nominal life of a structure.) The forecast shows that a structure built in Contra Costa County is likely to be subjected to a severely damaging earthquake during its useful life, such an earthquake could originate in several locations.

Knowing that a structure probably will be subject to a damaging earthquake during its useful life, it is only reasonable that it be designed to survive the event, or to at least protect its occupants and functions. To do this, architects and engineers need to have information on earthquake characteristics, such as earthquake accelerations and duration of strong ground shaking. These characteristics have been estimated for selected faults in Table IX-5. The data in the table may be used as an approximation of parameters prevailing over a large area and as a beginning point for determining the parameters affecting a particular location.

The tabulated earthquake characteristics in Table IX-5 are for "bedrock" for seismic response purposes, and may be changed in the near-surface materials. Solid ground or rock tends to dampen ground motion while poorly consolidated and water-saturated materials amplify ground motion.

These data should be used only by qualified personnel in project background evaluations, and by engineers and architects in their development of structural design criteria.

The ways different areas of the County would react to ground shaking have been mapped using approximation methods (described in a technical background report which is an appendix to this document). Figure IX-4 illustrates the estimated seismic susceptibility to damage based upon this mapping.

Areas situated on hard bedrock (e.g. the Briones Hills, Las Trampas Ridge, Diablo Range) may be expected to perform satisfactorily under earthquake conditions, provided that ground materials near the surface do not fail. Areas underlain by weakly consolidated sedimentary rocks (e.g. Pinole Ridge, the Tassajara Area, Alamo) are considered to possess a moderately low to moderate damage susceptibility.

The characteristics of ground motion in alluvial areas will differ somewhat from nearby bedrock areas (e.g., higher amplitudes, longer period, somewhat higher accelerations, etc.), and these differences may be important in the design of sophisticated structures. Areas underlain by firm, dry alluvium are considered to possess a moderate damage susceptibility.

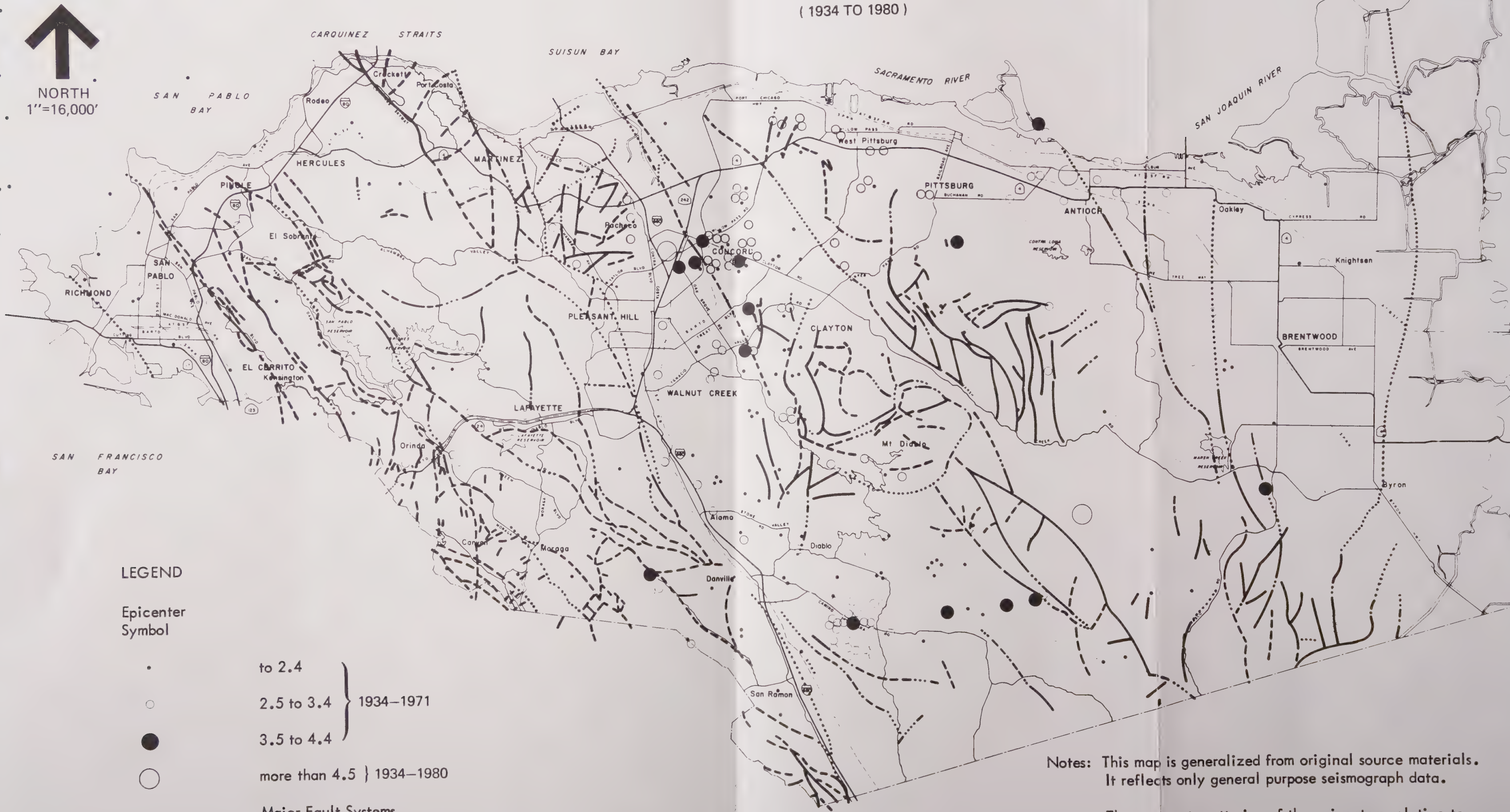
Areas underlain by young bay muds and deposits of the Sacramento-San Joaquin delta are considered to possess the highest damage susceptibility. Most of the County's development and population is located in areas of moderate to moderately low damage susceptibility.

Liquefaction is a specialized form of ground failure caused by earthquake ground motion. It is a "quicksand" condition occurring in water-saturated, unconsolidated, relatively clay-free sands and silts caused by hydraulic pressure (from ground motion) forcing apart soil particles and forcing them into quicksand-like liquid suspension. In the process, normally firm, but wet, ground materials are transformed into semi-liquid mixtures.

Catastrophic failures have provided a sobering reminder that liquefaction poses a major threat to the safety of engineered structures. Major landslides, settling and tilting of buildings on level ground, and failure of water retaining structures have all been observed as a result of this type of ground failure. Abundant evidence of slope failure attributable to liquefaction can be seen in photographs taken throughout the Bay Area after the 1906 San Francisco earthquake. It should be emphasized that great earthquakes anywhere in the Bay Area are capable of triggering liquefaction in Contra Costa County.

Historically, ground failure in its various forms, including liquefaction, has been a problem in areas of continually wet, unconsolidated geologic units. In Contra Costa County the areas which are most susceptible to ground failure include the geologically young sediments of the San Francisco Bay estuary, including the Delta lowlands.

FIG. IX - 3 EARTHQUAKE LOCATIONS IN CONTRA COSTA COUNTY
(1934 TO 1980)



LEGEND

Epicenter
Symbol

- to 2.4
 - 2.5 to 3.4
 - 3.5 to 4.4
 - more than 4.5
- 1934-1971
- 1934-1980

Major Fault Systems

Notes: This map is generalized from original source materials.
It reflects only general purpose seismograph data.

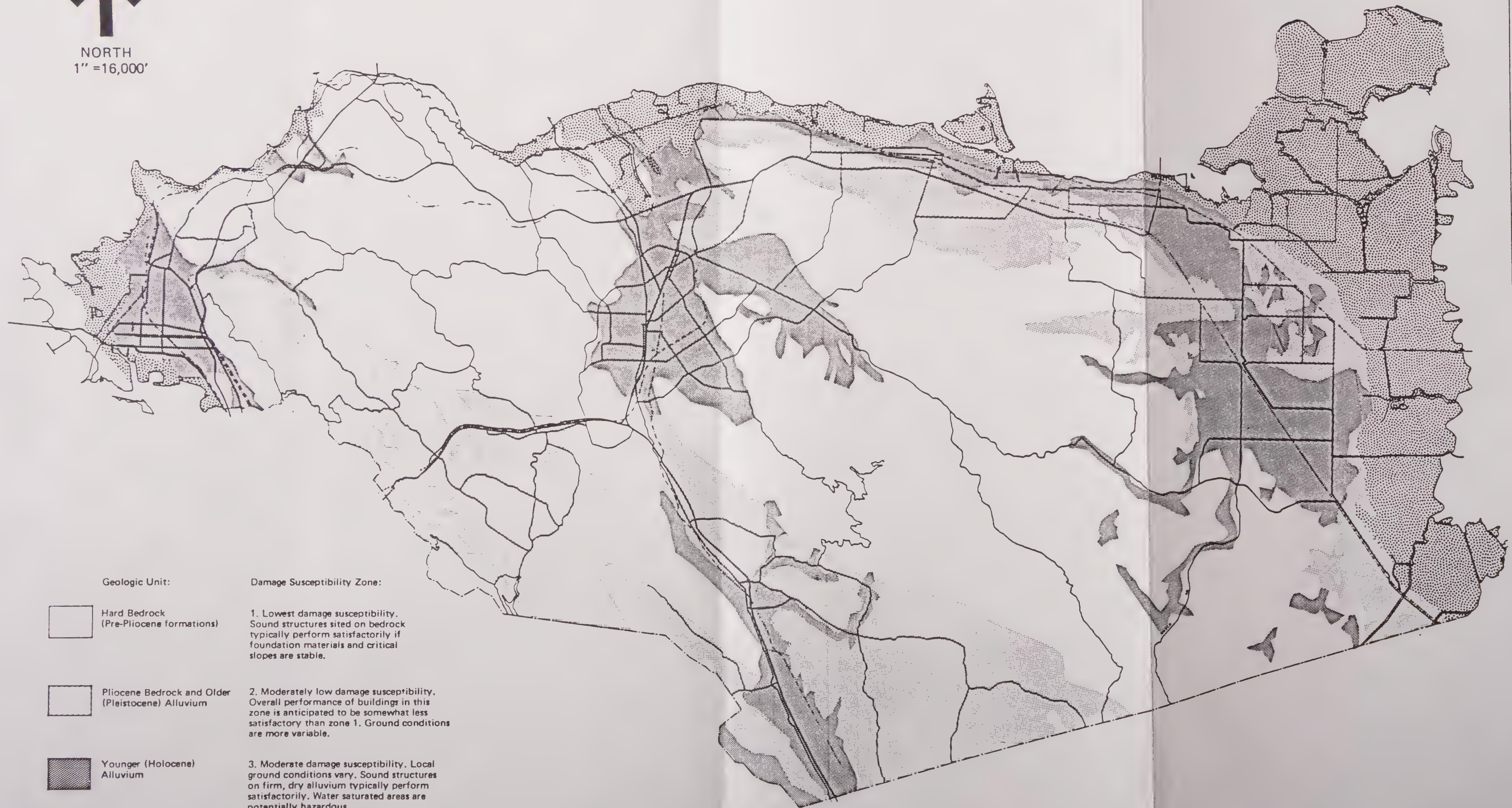
The apparent scattering of the epicenters relative to
fault locations is due to instrumentation and measure-
ment problems as well as the dip of the faults and other
factors.

Compiled by the Contra Costa County Community Development Department
from the University of California (Berkeley) Seismograph Station Records.

FIG. IX - 4 ESTIMATED SEISMIC GROUND RESPONSE



NORTH
1" = 16,000'



Geologic Unit:

Hard Bedrock
(Pre-Pliocene formations)

Pliocene Bedrock and Older
(Pleistocene) Alluvium

Younger (Holocene)
Alluvium

Modern sediments of San
Francisco Bay Estuary
and Delta lowlands.

Damage Susceptibility Zone:

1. Lowest damage susceptibility.
Sound structures sited on bedrock
typically perform satisfactorily if
foundation materials and critical
slopes are stable.

2. Moderately low damage susceptibility.
Overall performance of buildings in this
zone is anticipated to be somewhat less
satisfactory than zone 1. Ground conditions
are more variable.

3. Moderate damage susceptibility. Local
ground conditions vary. Sound structures
on firm, dry alluvium typically perform
satisfactorily. Water saturated areas are
potentially hazardous.

4. Highest damage susceptibility.
These weak, water saturated deposits
possess many adverse engineering
characteristics. Earthquake stability poor.

Source: Geologic unit information compiled from U.S.
Geological Survey and California Division of Mines
and Geology mapping. Earthquake response interpretation
by the Contra Costa Community Development Department

Within the area of continually wet unconsolidated deposits (Zone IV on Figure IX-4), the degree of seismic risk is closely related to local ground conditions. A site underlain by a great thickness of potentially unstable material (soft, compressive muds and loose, clay-free sands, etc.) is extremely hazardous. It should be recognized that such a site has a very limited development potential. Conversely, a site underlain by a minimum thickness of soft muds possesses a much better development potential. Utilizing existing knowledge of foundation engineering, such a site could be made suitable for a variety of land uses.

Liquefaction presents the potential for the most serious consequences in the Delta. Several pre-development studies have confirmed that a high potential for liquefaction exists below levees and proposed developments. This potential presents the possibility that several failures can occur simultaneously on a single levee, possibly preventing access for repairs. Flooding of the protected island would then be impossible to prevent and make emergency relief and later repair very difficult. (A further discussion of flooding and liquefaction in the Delta area is included in the "Flood Hazards" section below.)

Layers of ground material that are liquefied during an earthquake undermine the support of both natural landforms and man-made structures. Bluffs and ridges of unconsolidated material may slump under their own weight. Buildings and structures may sink and lean. Unfilled pipelines may rise to the surface on account of their buoyancy.

Figure IX-5 shows the estimated liquefaction potential for the County, based on geologic conditions (summarized in Figure IX-1), and a review of soils data from a number of sources.

Areas underlain by hard bedrock are not subject to liquefaction, so these can be eliminated from consideration when large areas are being evaluated on a generalized basis. In Contra Costa County, this is about half of its land area, but almost all of that is hilly topography. Areas with deep water tables and those underlain by well consolidated ground materials typically have low or moderate liquefaction potentials. The cities of western central and northern Contra Costa County fall into these categories.

However, geologically young and water saturated sandy sediments are highly susceptible to liquefaction, and extensive shoreline areas in western and northeastern locations and the delta have these characteristics. Soil engineering studies for subdivision and other major land development projects should make a careful appraisal of the liquefaction potential and the possible consequences of such liquefaction.

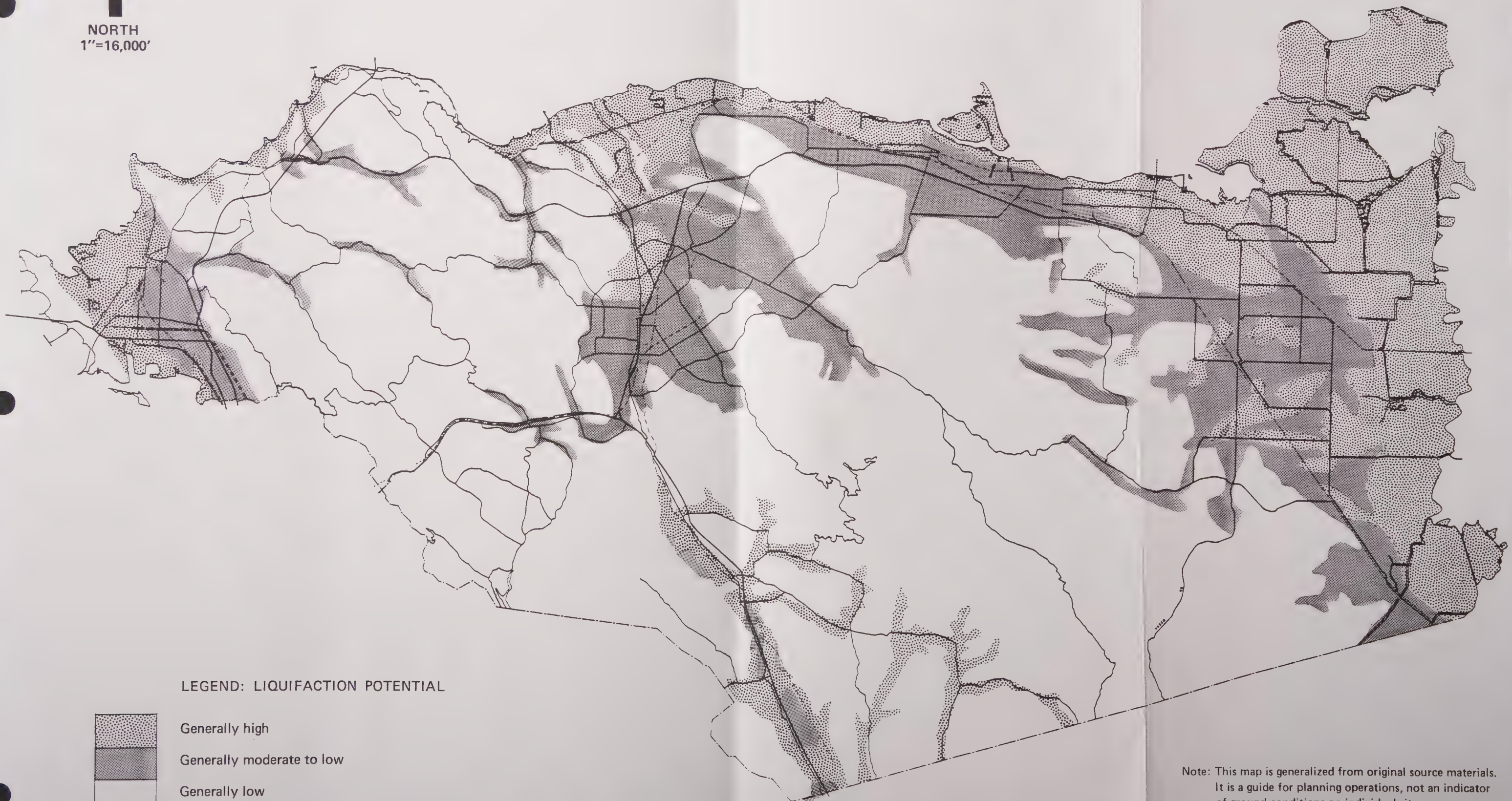
Seismic Hazards to Structures and Physical Facilities

In areas of substantial risk, geologic conditions should be a primary determinant of land use. Generally, urban or suburban uses or intensities should not be planned for areas where geologic conditions would result in unacceptable risks to life and safety, and areas where the public costs of overcoming geologic deficiencies would exceed public benefits. It should be recognized, however, that much can be done to mitigate potentially hazardous conditions. Project approvals in areas of substantial risk should be based on knowledge of local ground conditions and appropriate mitigation.



NORTH
1"=16,000'

FIG. IX - 5 ESTIMATED LIQUEFACTION POTENTIAL



Note: This map is generalized from original source materials. It is a guide for planning operations, not an indicator of ground conditions on individual sites.

Because it is impractical for government to prepare geologic information at great detail on a Countywide basis, it is preferable to deal with geologic conditions through project review.

The preceding section has dealt with naturally-occurring hazards of earthquake activity and landslides. Structural hazards, on the other hand, are entirely man-made; they result from man's incomplete consideration and mitigation of natural hazards. In the following section the hazards considered are those which are increased by the ever-present potential for seismic activity in or near the County.

The goals of this Safety Element give priority to the protection of human lives and to the reduction of risks of serious injury; and state that the reduction of damage to property must be balanced against financial capability, the quality of life, and environmental quality. It advocates an approach to seismic safety in which risk to lives should not be acceptable, but buildings and other property may be expendable.

Table IX-6 details the acceptable risks from seismic events relative to various types of structures by use and occupancy. This scale was developed by the California Legislature's Joint Committee on Earthquake Planning and has been adopted in most California building codes and by most California planning agencies.

Following the experience of the San Fernando Earthquake of 1971, building code provisions have strengthened many structural design criteria. A major deficiency in the code is the lack of strict criteria governing attachment of non-structural elements which present a danger to persons if they are dislodged during an earthquake.

The major technical impediment to the development of programs to correct hazardous structural conditions or "dangerous buildings" is the lack of a comprehensive and systematic inventory. Conventional sources of generalized structural information, such as the Federal Census of Housing and Land Use inventories for the general plan, are not adequate to make even large-area policy planning assessments of where problem structures are located, what their problems are, and how many structures are involved. Similarly, normal sources of information on individual structures are inadequate to provide the kinds of information needed for implementation and enforcement programs. In both cases, special inventories and specialized reviews of existing data sources are necessary to prepare seismic safety programs dealing with structures.

State legislation passed in 1986, Senate Bill 547, requires that jurisdictions prepare an inventory of unreinforced masonry structures and adopt local ordinances to improve or replace this type of structure. Unreinforced masonry structures are generally believed to be prone to collapse with resultant high risk of deaths and injuries in an earthquake. At this writing, the legislation has sparked a debate within the State Seismic Safety Commission and the earthquake engineering community, as to whether this is a needed first priority, should be reinforced by inventorying and strengthening other damage-prone structures, or whether, in fact, the larger number of younger but earthquake-prone structures should have a higher priority.

TABLE IX-6
A SCALE OF ACCEPTABLE RISKS

Level of Acceptable Risk	Kinds of Structures	Extra Project Cost Probably Required to Reduce Risk to an Acceptable Level
1. Extremely low ¹	Structures whose continued functioning is critical, or whose failure might be catastrophic: nuclear reactors, large dams, power intertie systems, plants manufacturing or storing explosives or toxic materials.	No set percentage (whatever is required for maximum attainable safety.)
2. Slightly higher than under level ¹	Structures whose use is critically needed after a disaster: important utility centers: hospitals, fire, police, emergency communication facilities; fire stations, and critical transportation elements such as bridges and overpasses; also smaller dams.	5 to 25 percent of project cost ²
3. Lowest possible risk to occupants of the structure ²	Structures of high occupancy, or whose use after a disaster would be particularly convenient: schools, churches, theaters, large hotels, and other high-rise buildings housing large numbers of people, other places normally attracting large concentrations of people, civic buildings such as fire stations, secondary utility structures, extremely large commercial enterprises, most roads, alternative or non-critical bridges and overpasses.	5 to 15 percent of project cost ⁴
4. An "ordinary" level of risk to occupants of the structure ^{3,5}	The vast majority of structures: most commercial and industrial buildings, small hotels and apartment buildings, and single family residences.	1 to 2 percent of project cost, in most cases (2 to 10 percent of project cost in a minority of cases) ⁴

(Footnotes continued on next page)

Notes for IX-6

- ¹ Failure of a single structure may affect substantial populations.
- ² These additional percentages are based on the assumption that the base cost is the total cost of the building or other facility when ready for occupancy. In addition, it is assumed that the structure would have been designed and built in accordance with current California practice. Moreover, the estimated additional cost presumes that structures in this acceptable-risk category are to embody sufficient safety to remain functional following an earthquake.
- ³ Failure of a single structure would affect primarily only the occupants.
- ⁴ These additional percentages are based on the assumption that the base cost is the total cost of the building or facility when ready for occupancy. In addition, it is assumed that the structures would have been designed and built in accordance with current California practice. Moreover the estimated additional cost presumes that structures in the acceptable-risk category are to be sufficiently safe to give reasonable assurance of preventing injury or loss of life during any earthquake, but otherwise not necessarily to remain functional.
- ⁵ "Ordinary risk": Resist minor earthquakes without damage, resist moderate earthquakes without structural damage, but with some non-structural damage; resist major earthquakes of the intensity or severity of the strongest experienced in California, without collapse, but with some structural as well as non-structural damage. In most structures, it is expected that structural damage, even in a major earthquake, could be limited to repairable damage. (Structural Engineers Association of California).

Source: Meeting the Earthquake Challenge, Part 1, p. 9.

Certain public and institutional services are needed immediately following an earthquake to aid the injured, prevent additional casualties, and protect property. It is imperative that these critical and emergency service facilities survive the earthquake and remain operative in the aftermath. Certain other public facilities (which should be earthquake-resistant for other safety reasons), may be required for emergency shelter and gathering areas for reassembly of separated family members, following any major emergency.

Underground components of utility systems are often extensively damaged during substantial earthquakes. Pipelines for domestic and fire fighting water, sewer service, and gas, and even for electrical services and communications can be shattered. Above-ground transmission and distribution systems are also susceptible to earthquake damage, but they are usually easier and less expensive to restore than the underground installations.

Utility plants and stations are also subject to earthquake damage. One of the most severely damaged facilities in the 1971 San Fernando earthquake was the \$100 million Sylmar Converter Station, an electric system installation of regional importance.

Transportation facilities, especially the bridges, roads and streets of the arterial network, are "critical" or "essential" facilities for responding to the effects of a substantial earthquake because they are necessary for the movement of emergency vehicles, supplies, and evacuation transport. Later, they are necessary to accomplish reconstruction and restoration of the local economy. Airports, in enabling damage assessment reconnaissance flights to take place immediately after a disaster, and afterwards to accommodate the evacuation of casualties and supplies, are also initially important. Later, the full range of transportation facilities, including railroads, ports, and public transportation systems have roles to play in the recovery process.

Transportation systems are vulnerable to earthquakes. Road and streets are easily blocked, and are often buckled and broken, but emergency routes are readily improvised in time. The interchanges of freeways and similar installations (bridges and overpasses, for example) are often damaged but not readily restored. In the moderate 1971 San Fernando earthquake, forty-two bridge structures, (mainly interchanges) were damaged and five collapsed. Railroad tracks are often so badly warped that they must be rebuilt. Even airports are susceptible to great damage; the control tower at the Anchorage, Alaska, International Airport fell during the 1964 earthquake there.

A major earthquake impacting Contra Costa County would be expected to cause widespread damage to its transportation systems. The linear elements of these systems--roads, railroad tracks, and BART tracks--necessarily cross various earthquake faults as well as areas susceptible to ground failure. Landsliding from non-earthquake causes is a recurring problem that would be intensified by ground shaking.

Critical industrial facilities are of special concern. The industrial earthquake hazard includes the spillage of stored potentially dangerous materials, disruption of critical industrial processes, and accidents involving potentially dangerous materials being loaded or transported.

The major cause of concern regarding critical industrial facilities is that the seismic safety consideration given to the location of plants and storage areas and to the design and construction of industrial structures here must be up to date. Furthermore, much new information on the nature of earthquake effects and the design of structures--and this has been learned in the last two decades--is only now being applied to building codes and practices. As a result, the existing installations need to be evaluated in the light of current knowledge just as dams were reviewed as a result of the very unsatisfactory performance of the Upper and Lower Van Norman Reservoir Dams during the 1971 San Fernando earthquake. This kind of information is needed to assess the situation in Contra Costa County and it is not generally available.

The Post-Earthquake Recovery and Redevelopment Advisory Group to the Legislature's Joint committee on Seismic Safety has made a series of recommendations which suggest control mechanisms that can be instituted prior to an earthquake, and which will go into effect automatically in the post-earthquake period to provide a framework for reconstruction and redevelopment. The objectives of these recommendations are to minimize recovery problems and maximize the degree of seismic safety afforded to future generations inhabiting the stricken area.

This panel of experts has recommended that counties and cities provide for post-disaster conditions in the General Plans. There is an obvious need to ensure that proper consideration be given to changes in land use in areas which are heavily damaged by future earthquakes. The planning staff should develop contingency procedures for immediate updating of the General Plan in areas which are heavily damaged by a severe earthquake. Additionally, it is suggested that contingency redevelopment be considered in preparing or updating area plans.

The most expeditious results from this program can be gained through the process of public reviews for both public and private projects because they rely to a substantial extent on the project sponsor to respond to the findings of studies prepared for the project. The basic recommendation is that the Safety Element be utilized to its fullest in performing project reviews. It is intended to guide public and private planning for development and public works, emergency operations, post-disaster recovery assistance, and redevelopment. The policies are suggested for consideration by all public, private, and utility agencies in the County which impact on, or can improve the state of public safety, guide public and private planning for development and for public works, emergency operations, post-disaster recovery assistance, and redevelopment. The policies are suggested for consideration by all public, private, and utility agencies in the County which impact on, or can improve the state of public safety.

The purpose of the preceding discussion has been to make observations and preliminary estimates of the prevalence, location and degree of hazard posed by certain types of existing structures and facilities. Furthermore, it is intended to indicate the scope, direction and magnitude of work to be done subsequently to review individual facilities. It is apparent that the highest priority should be given to (a) critical structures (including industrial facilities and high occupation buildings) that are sited in hazardous fault zones, in areas subject to seismically-triggered flooding, and in marshland areas; (b) building types that are know to be hazardous; (c) older structures which have not had the benefit of seismic design provisions.

Goals

- 9-A. To protect human life and reduce the potential for serious injuries from earthquakes; and to reduce the risks of property losses from seismic disturbances which could have severe economic and social consequences for the County as a whole.
- 9-B. To reduce to a practical minimum injuries and health risks resulting from the effects of earthquake ground shaking on structures, facilities and utilities.
- 9-C. To protect persons and property from the life-threatening, structurally and financially disastrous effects of ground rupture and fault creep on active faults, and to reduce structural distress caused by soil and rock weakness due to geologic faults.
- 9-D. To reduce to a practical minimum the potential for life loss, injury, and economic loss due to liquefaction-induced ground failure, levee failure, large lateral land movements toward bodies of water, and consequent flooding; and to mitigate the lesser consequences of liquefaction.

Policies Regarding General Seismicity

- 9-1. Contra Costa County, as part of an area with high seismicity, shall recognize that a severe earthquake hazard exists and shall reflect this recognition in its development review and other programs.
- 9-2. Significant land use decisions (General Plan Amendments, rezonings, etc.) shall be based on a thorough evaluation of geologic-seismic and soils conditions and risk.
- 9-3. In seismically active areas, structures for human occupancy shall be designed to perform satisfactorily under earthquake conditions (see Table IX-6).
- 9-4. In areas prone to severe levels of damage from ground shaking (Zone IV on Map IX-4), where the risks to life and investments are sufficiently high, geologic-seismic and soils studies shall be required as a pre-condition for authorizing public or private construction.
- 9-5. Staff review of applications for development permits and other entitlements, and review of applications to other agencies which are referred to the County, shall include appropriate recommendations for seismic strengthening and detailing to meet the latest adopted seismic design criteria.
- 9-6. Structures for human occupancy, and structures and facilities whose loss would substantially affect the public safety or the provision of needed services, shall not be erected in areas where there is a high risk of severe damage in the event of an earthquake.

- 9-7. The County should encourage cooperation between neighboring government agencies and public and private organizations to give appropriate attention to seismic hazards to increase the effectiveness of singular and mutual efforts to increase seismic safety.

Policies Regarding Groundshaking

- 9-8. Ground conditions shall be a primary consideration in the selection of land use and in the design of development projects.
- 9-9. In areas susceptible to high damage from ground shaking (Zone IV on Map IX-4) geologic-seismic and soils studies shall be required prior to the authorization of major land developments and significant structures (public or private).
- 9-10. Policies regarding liquefaction shall apply to other ground failures which might result from groundshaking but which are not subject to such well-defined field and laboratory analysis.

Policies Regarding Faults and Fault Displacement

- 9-11. Classify as active those faults which have ruptured the ground surface during Holocene geologic time, roughly the last 10,000 years. Classify as potentially active faults which displace Quaternary geologic units, those formed during approximately the last two to three million years.
- 9-12. Prohibit construction of structures for human occupancy, and structures whose loss would affect the public safety or the provision of needed services, over the trace of an active fault.
- 9-13. In areas where active or inactive earthquake faults have been identified, the location and/or design of any proposed buildings, facilities, or other development shall be modified to mitigate possible danger from fault rupture or creep.
- 9-14. Preparation of a geologic report shall be required as a prerequisite before authorization of public capital expenditures or private development projects in areas of known or suspected faulting.
- 9-15. To the extent practicable, the construction of structures requiring a high degree of safety and other critical structures shall not be allowed in an active or potentially active fault zone.
- 9-16. When such a critical structure must be located in a fault zone, the structure shall be carefully sited, designed and constructed to withstand the anticipated earthquake stresses.
- 9-17. Locate roads, particularly those which carry important utilities or large volumes of traffic, over active faults only where other alternatives are impractical.

Policies Regarding Liquefaction

- 9-18. The General Plan shall discourage urban or suburban development in areas susceptible to high liquefaction dangers, while recognizing that there are low intensity uses such as water-related recreation and agricultural uses that are appropriate in such areas.
- 9-19. To the extent practicable, the construction of critical facilities, structures involving high occupancies, and public facilities shall not be sited in areas identified as having a high liquefaction potential, or in areas underlain by deposits classified as having a high liquefaction potential.
- 9-20. Any structures permitted in areas of high liquefaction danger shall be sited, designed and constructed to minimize the dangers from damage due to earthquake-induced liquefaction.
- 9-21. Approvals to allow the construction of public and private development projects in areas of high liquefaction potential shall be contingent on geologic and engineering studies which define and delineate potentially hazardous geologic and/or soils conditions, recommend means of mitigating these adverse conditions; and on proper implementation of the mitigation measures.

Implementation Measures

- 9-a. Require that structures intended for human occupancy are adequately set back from active and potentially active fault traces. Ensure that minimum setbacks take into account the varying degrees of seismic risk and the consequences of failure.
- 9-b. Utilize the land in the setback zones along active and potentially active fault traces for open forms of land use that could experience displacement without endangering large numbers of people or creating secondary hazards. Examples are yards, greenbelts, parking lots, and non-critical storage areas.
- 9-c. Require comprehensive geologic and engineering studies for any critical structure, whether or not it is located within a Special Studies Zone.
- 9-d. Through the environmental review process, require geologic, seismic, and/or soils studies as necessary to evaluate proposed development in areas subject to groundshaking, fault displacement, or liquefaction.
- 9-e. Evaluate and, where necessary, upgrade water distribution, sewage disposal, gas and electricity, communications and other service facilities in areas subject to seismic hazards.
- 9-f. Evaluate and upgrade hospitals, bridges, major roads, and other essential structures to be able to withstand seismic hazard.

- 9-g. Establish a clearinghouse for vital service records and distribution system design plans.
- 9-h. In areas that could become isolated in the event of a major earthquake, ensure that adequate medical aid, water supply, waste disposal, and other public health and safety services are available.
- 9-i. Adopt ordinance code provisions related to the repair or replacement of unreinforced masonry structures.
- 9-j. Prepare an inventory of post-disaster public facilities to be used for emergency shelter and gathering places.
- 9-k. Authorize the Community Development Department to immediately begin updating the general plan in areas which are heavily damaged by a severe earthquake.
- 9-l. Develop ordinances incorporating existing Board of Supervisors' policy on administering the Alquist Priolo Special Studies Zone Act.

Ground Failure and Landslide Hazards

Introduction

The major geologic hazards in Contra Costa County, aside from earthquake rupture and direct effects of ground shaking, are unstable hill slopes and reclaimed wetlands and marsh fill areas. Slopes may suffer landslides, slumping, soil slips, and rockslides. Reclaimed wetlands, whether filled or not, are subject to lateral and vertical movements which can be damaging to structures, utilities, and transportation routes and facilities.

Landslides and other ground failures occur during earthquakes, triggered by the strain induced in soil and rock by the groundshaking vibrations, and during non-earthquake conditions, most frequently during the rainy season. Both natural and man-induced factors contribute to these slope failures.

The State Division of Mines and Geology estimated that between the years 1970 and 2000, earthquake costs in the state would be 21 billion dollars and landslide costs, nearly 10 billion dollars. Contra Costa County's costs could be high in proportion to the state as a whole because of its large area of hilly terrain and high proportion of young, poorly consolidated geologic formations which are prone to slope failure; and because at least five faults within the County are active and likely to generate earthquakes, while other active faults are nearby the County and earthquakes on them are also likely to be felt here.

Ground failure occurs when stresses in the ground exceed the resistance of earth materials to deformation or rupture. This instability can be triggered by earthquake shaking, which instantaneously places high stresses on earth materials by loss of soil strength due to saturation or seismic shaking. Ground failure can also be triggered by man-induced changes, such as building a

structure on a slope or unstable soils.

The manifestations of ground failure are complex and highly variable; they include numerous varieties of landslides, sloughing, liquefaction, ground cracking, lurching, lateral spreading, subsidence and differential settlement. Whether ground failure occurs, and the type of ground failure that develops, depends on topographic, geologic, and hydrologic characteristics of the ground, as well as ground shaking.

Important effects of ground failure in addition to direct life and structure loss and injuries, include loss of access for emergency services and repairs at important facilities which are accessed by traversing unstable ground and the release of environmental pollutants and toxins from containment facilities.

Landslides are perhaps the most common form of ground failure that is not caused by earthquakes. In areas where a severe slope stability problem exists, landslide damage can best be avoided by simply not building on the unstable ground. In some hazardous areas, landslides can be totally removed or stabilized. Through good planning and careful, controlled design, landslide losses can be reduced by more than ninety-five percent.

Landslides due to slope failure is most frequent in "wet years" with above-average rainfall, but they can occur at any time. Landslides may also occur on slopes of 15 percent or less; however, the probability is greater on steeper slopes, with old landslide deposits the most subject to continuing failure.

A disaster affecting hundreds or thousands of persons in the County is not expected to result from slope failures. Rather, there is a persistent risk of damage to public and private property including individual residences, roads, canals and reservoirs, and other facilities.

On a Countywide basis the two most important factors influencing the performance of slopes are the nature of the bedrock or surficial deposits and the slope angle. However, there are a number of factors which have a profound effect on the stability of a particular hillside. For example, the presence or absence of deep-rooted vegetation; surface and subsurface drainage conditions; thickness and engineering characteristics of soils and underlying weathered, partially decomposed rock; orientation of bedding; or locally high rainfall can exert a controlling effect on the intensity of natural processes occurring on a particular hillside.

County General Plans historically have recognized that major slope areas in excess of 26 percent are "not readily developable" and "undevelopable", recognizing the cost and engineering difficulties of grading steep slopes as well as their inherent unsuitability. The developability limit of 26 percent agrees in general with customary limits throughout the Bay Area, and varies only slightly from the 30 percent standard reference developed by the State Division of Mines and Geology as the maximum developable slope. This is a statewide reference which does not reflect special conditions such as clayey soils prevalent in the County.

Landslides and ground slippages are another form of ground failure which may be precipitated by significant ground motion produced by earthquakes. Areas that are subject to slides and slippages from other natural causes may be very hazardous under earthquake conditions. This is also to say that earthquake effects will be more extensive if the earthquake happens during the rainy season when ground conditions are more amenable to landsliding and ground slippage.

Whether a landslide will or will not occur at any specific, presently stable place, usually cannot be predicted under "natural conditions" because of the range of natural conditions and changes which occur with time. However, land which has experienced landsliding in the past is believed to be generally more slide-prone, and also is more sensitive to man-induced changes, such as grading, watering, removing or changing the type of vegetation, and changing drainage patterns, among many possible factors.

Land which has marginal stability--whether natural or as the result of man's changes--is more likely to fail during earthquakes than more stable land. Many old landslides reach a position of static stability that may be lost as a result of earthquake shaking. The nearer to "equilibrium" condition the land is during normal conditions, the more likely the equilibrium (stable condition) will be lost during earthquake shaking. It should be noted again, however, that equilibrium may prevail under natural conditions at some times, yet be reduced to marginal stability or instability with different, natural or changed, conditions.

Slight changes in equilibrium may result in slow, barely recognizable, landslide movement, and/or movement which periodically occurs under unfavorable conditions. Landslides have been studied which can be "turned on and off" by allowing groundwater levels to rise or fall, or by changing the mass of material in a particularly sensitive part of the landslide.

Goals

- 9-E. To minimize the risk of loss of life or injury due to landslides, both ordinary and seismically-induced.
- 9-F. To reduce economic losses and social disruption from landslides, both ordinary and seismically-induced.

Policies

- 9-22. Slope stability shall be a primary consideration in the ability of land to be developed or designated for urban uses.
- 9-23. Slope stability shall be given careful scrutiny in the design of developments and structures, and in the adoption of conditions of approval and required mitigation measures.
- 9-24. Proposed extensions of urban or suburban land uses into areas characterized by slopes over 15 percent and/or generally unstable land shall be evaluated with regard to the safety hazard prior to the issuance of any discretionary approvals.

- 9-25. Subdivision of rural lands outside planned urban areas down to the allowed minimum parcel size shall be discouraged, if the parcels are within, or only accessible through, geologically unstable areas.
- 9-26. Approvals of public and private development projects in areas subject to slope failures shall be contingent on geologic and engineering studies which define and delineate potentially hazardous conditions and recommend adequate mitigation.
- 9-27. Soil and geological reports shall be subject to the review and approval of the County Planning Geologist.
- 9-28. Generally, residential density shall decrease as slope increases, especially above a 15% slope.
- 9-29. Significant areas with slopes over 26 percent shall be considered unsuitable for types of development which require extensive grading or other land disturbance.
- 9-30. Development shall be precluded in areas when landslides cannot be adequately repaired.
- 9-31. Subdivisions approved on hillsides which include individual lots to be resold at a later time shall be large enough to provide flexibility in finding a stable buildable site and driveway location.
- 9-32. The County shall not accept dedication of public roads in unstable hillside areas, or allow construction of private roads there which would require an excessive degree of maintenance and repair costs.

Map of Slopes and Landslide Hazard Areas

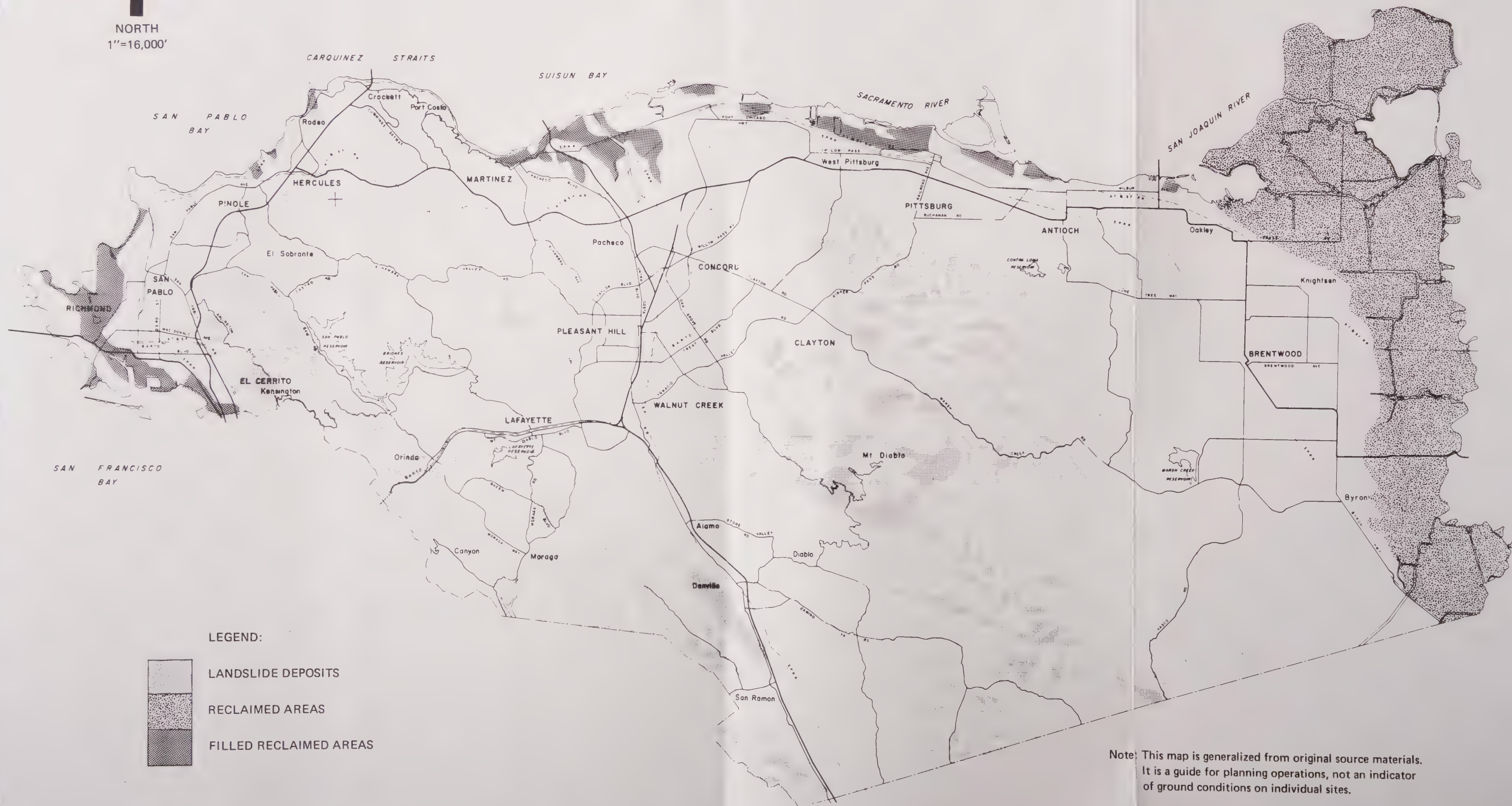
Maps showing degree of slope, landslides, landslide deposits, and relative slope stability (or instability) have been produced by several State, regional, and Federal agencies; several such maps cover parts of Contra Costa County, and others cover areas as large as the entire nine-County Bay Area. These maps and studies are referenced in the bibliography.

Figure IX-6 shows the general locations where landslide deposits are prevalent, based on U.S. Geological Survey landslide maps. Figure IX-7 illustrates in a general fashion the areas of the County where the prevailing slopes are 26% or over. Neither of the maps are definitive on a site-specific basis, but they do present an overview of stability and slope conditions for large areas. They are not a substitute for site-specific engineering geology and soils investigations. Nevertheless, several of the maps, especially those that are based on field-checked aerial photograph study, are valuable tools for preliminary assessments of the intensity or type of more detailed future investigations required for site development.



NORTH
1"=16,000'

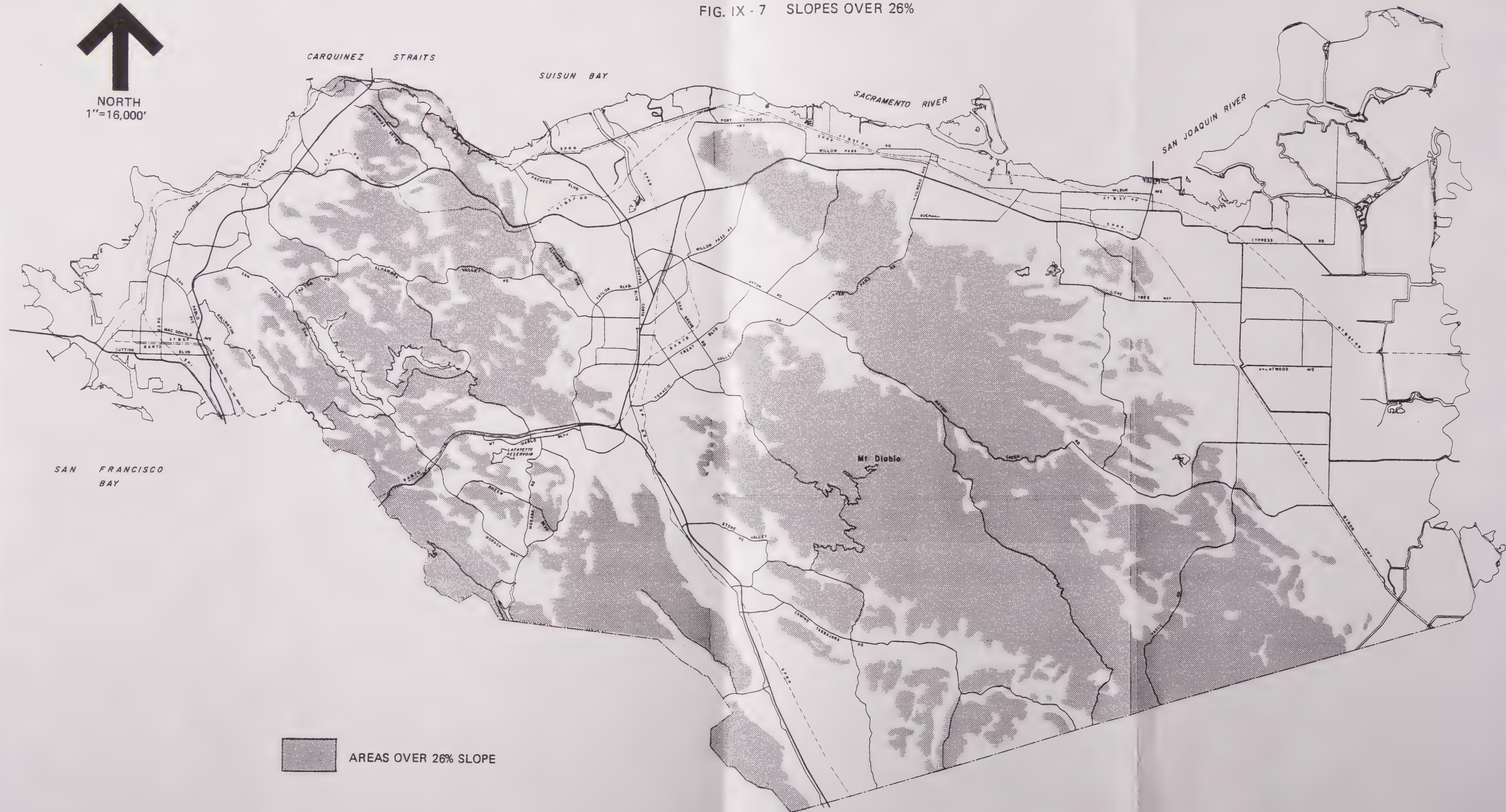
FIG. IX - 6 GEOLOGIC (LANDSLIDE) HAZARDS



Source: U.S. Geological Survey and the Contra
Costa County Community Development Department 1975

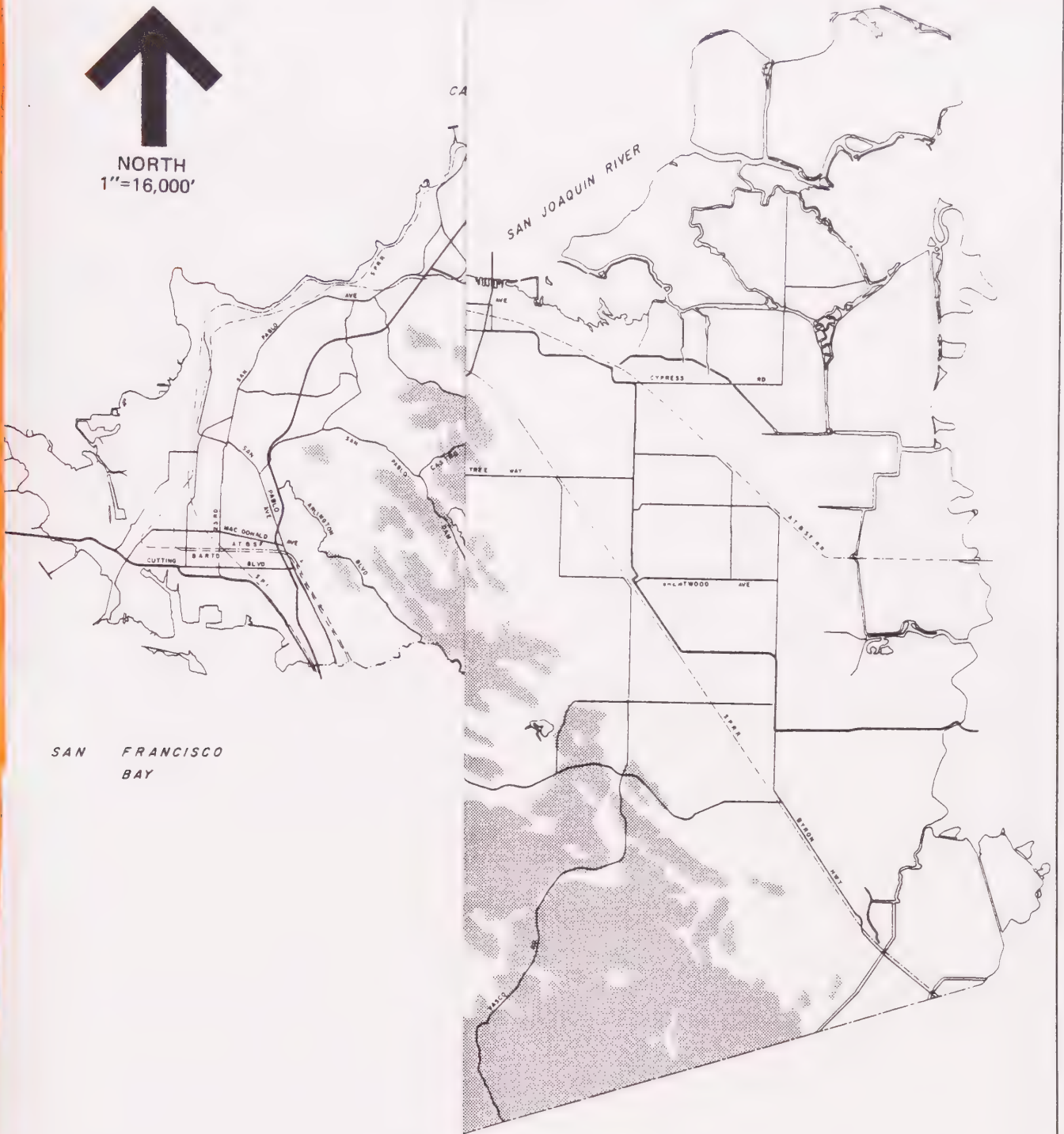
Note: This map is generalized from original source materials.
It is a guide for planning operations, not an indicator
of ground conditions on individual sites.

FIG. IX - 7 SLOPES OVER 26%



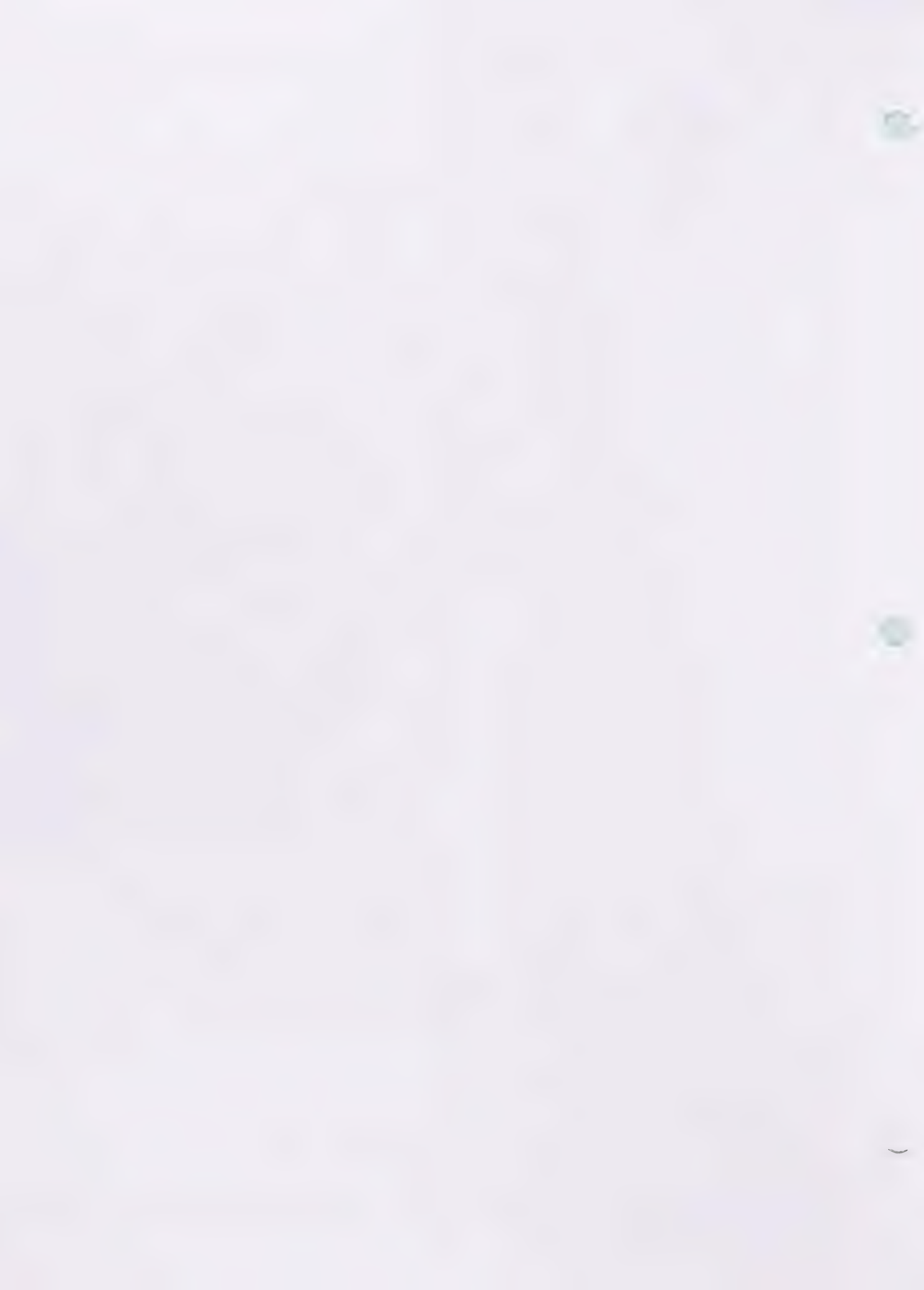


NORTH
1"=16,000'



SAN FRANCISCO
BAY

**COSTA COUNTY
CALIFORNIA**



Implementation Measures

- 9-m. Prepare administrative maps at a scale of 1" = 2 miles for the County which indicate relative geologic (slope) stability, based upon the six categories recommended by the U.S. Geologic Survey.
- 9-n. Analyze the slope failure records of the Building Inspection Department and U.S. Geological Survey and recommend any needed improvements in the County's grading ordinance.
- 9-o. Consider adoption of a hillside preservation ordinance in order to implement the policies of the Safety Element and other elements of the General Plan.
- 9-p. Refer development proposals in areas of potential land instability or geologic hazards to the County geologist for review and recommendation.
- 9-q. Through the environmental review process, require geologic and engineering studies as necessary to evaluate proposed development in areas subject to potential landslide hazards.
- 9-r. Applications for development projects shall be accepted as complete only after the County Geologist approves any required soils and geologic reports.
- 9-r. General Plan Amendment requests which involve parcels with slopes of over 15% shall be accompanied by a soils geologic report.

Flood Hazards

Introduction

Substantial areas within Contra Costa County are subject to flooding. According to records maintained by the Federal Emergency Management Agency (FEMA), the majority of the County's creeks and shoreline areas lie within the 100-year flood plain, i.e. an area subject to flooding in a storm that is likely to occur (according to averages based upon recorded measurements) once every one hundred years. In the West and Central County, these areas include portions of the shoreline in the vicinity of Richmond, Hercules, Rodeo, Crockett, Port Costa, and Martinez; most creeks in urbanized areas, including Concord, Walnut Creek, and the San Ramon Valley; and reservoirs and creeks located on undeveloped East Bay Regional Park District (EBRPD) and East Bay Municipal Utility District (EBMUD) lands. In the East County, substantial acreages lie within the 100-year flood plain, including Bethel Island, the Veale Tract, Holland Tract, Franks Tract, Jersey Island, and the area in the Byron vicinity. Portions of the Pittsburg, Antioch, and Brentwood areas, as well as a number of creeks in East County, are also subject to flooding. The FEMA records are maintained as a means of determining flood insurance rates through the National Flood Insurance Program.

The most serious flood hazard that exists in Contra Costa County relates to the system of levees that protect the islands and adjacent mainland in the San Joaquin-Sacramento River Delta area, in eastern Contra Costa. Levees are basically long, continuous dams that keep water out of a lower area, such as the Delta islands, many of which are at an elevation just above or below sea level.

The islands in the California Delta were drained during the nineteenth century to create high quality agricultural land. Since then, the peat-laden soil of many of the islands has oxidized, resulting in a sinking of their island floors and consequently requiring the construction of higher and heavier levees. Levee failure occurs in some areas where levees rest on soft mud, silt, or peat.

The islands continue to flood. In general, the islands have been reclaimed after each flood. However, Franks Tract State Park, which is basically a lake east of Bethel Island, and the Big Break area of water north of Oakley, are visible reminders that it is not always practical or economical to reclaim flooded lands.

The Delta area has also become popular in recent decades as a recreation center, which contributes to the problem. Boat movement on the waterways causes waves which accelerates the natural process of levee erosion.

The threat of levee failure during periods of high water is constant. In recent years, during 1973, 1980, 1982, 1983, and 1986 one or more Delta island levees failed or were overtopped, and some of these were summer breaks that did not occur at times of high storm runoff. Some islands in the Delta have been flooded two or three times since 1980.

The possibility that flooding will occur on the islands in the Delta is greatly increased by two ongoing, natural processes, which compound the dangers that periodic high tides or strong winter storms may breach a portion of the existing levee system. The two natural process which impact the integrity of the levee are rising sea levels, caused by the world-wide "greenhouse effect," and "subsidence."

The **greenhouse effect**, or the rise in sea level projected over the next century, has recently been identified as a potential flooding problem. Hydrologists estimate the rate of rise may increase from the present one-half foot per century to approximately two to eight feet. The anticipated rise is believed to be caused by warming of the global climate due to accumulation in the atmosphere of gases such as carbon dioxide, methane, and chlorofluorocarbons which result from fossil fuel burning and deforestation of tropical rain forests. Since many factors affect global climates, the rate of change over a relatively short time-period, even a century, is very difficult to establish. The U.S. Environmental Protection Agency suggests that a rate of four feet per century be assumed for planning purposes for the San Francisco Bay Area. It is important to note that the existing FEMA flood hazard maps do not include the greenhouse effect in their potential flooding analysis.

The natural process of oxidation of island peat soils causes a gradual sinking of the ground, called **subsidence** by geologists. The issue of subsidence is key to understanding the flood dangers in the Delta area. As many of the islands in the Delta (along with their levees) sink in elevation, the levees that protect

the island's agricultural and/or residential uses must be raised and reinforced by adding more earth fill to the top of the levees. Recent evidence indicates that many islands have experienced significant subsidence over the last several decades.

For example, it is estimated that Webb Tract in Contra Costa County has subsided up to 17 feet, and Bacon Island adjacent to Contra Costa County has subsided approximately 14 feet. Most reclaimed portions of the Delta in the County have subsided at least 10 feet. Areas that have experienced a measurable amount of subsidence are illustrated in the Flood Hazards map included in a later section of this chapter. These areas are highly susceptible to flooding.

A number of causes for subsidence have been identified. The oxidation-decay and shrinkage of peat and other soils which are rich in organic matter and fine clay particles may be the largest contributor to the problem. However, the withdrawal of shallow ground water for surface drainage may also cause surface compaction and/or soil shrinkage, which results in a loss of elevation. There is also evidence that the pumping of groundwater, oil, or gas supplies from underneath several of the islands may be contributing to the natural consolidation and subsidence. Natural "tectonic" subsidence, may also be contributing to the problem.

There are great difficulties involved in estimating the amounts and rates of subsidence from island to island in the Delta, since subsidence changes the elevation of bench marks, the survey points from which elevations are determined. It is first necessary to establish elevation control from stable areas outside the Delta, which requires very long survey lines. Recent work is concentrating on the use of an unmanned space satellite as a "survey platform" from which to study changes in elevations.

The consequence of subsidence and the possibility of sea levels rising due to the Greenhouse effect is the increased potential that levees will fail and tidewater and high river water will inundate farmed and populated areas in the Delta. The California Delta in Contra Costa and in the adjoining counties has historically been devoted to agriculture and its population has remained small. However, growing commercial recreation and residential uses, as evidenced by the success of year-round subdivisions such as Discovery Bay, are leading to increases in the permanent population of the area. It will become increasingly more important, but also more difficult, for the County to provide adequate flood protection to residents and businesses in the Delta area. New urban development should be allowed only if long term, year-round flood protection can be provided to the area.

By allowing more residential and commercial development on or near the islands of the Delta, the disaster potential of subsidence and flooding when levees do fail, becomes much greater. Approving land uses in the delta area that support significant new populations must be carefully measured in terms of the potential loss of lives and property that could occur in the event of a major flood. The economic consequences of certain development should also be studied.

Seismicity presents additional special problems in the Delta. Delta levees are, in places, underlain by sands that are susceptible to ground failures including liquefaction during an earthquake. Strong earthquake shaking can cause the entire levee foundation to lose strength, leading to levee failure. Many levees are themselves constructed of liquefiable sand.

According to a report prepared for the East Bay Municipal Utility District, whose aqueduct pipes cross the Delta, twelve separate faults are capable of causing ground motion sufficient to cause liquefaction, requiring accelerations on the order of 7 to 27 percent of gravity (0.07 to 0.27g), with shaking lasting from about 5 to 23 seconds. A 1985 study by a State Department of Water Resources geologist noted levee slips and cracks from five recent earthquakes, some as distant as 150 miles away from Contra Costa. A large nearby earthquake could cause a number of simultaneous levee failures, making repairs difficult because the levees are the only land access to many points following a levee break.

In addition to the flooding hazards associated with levee failure caused by an earthquake, fault ruptures or ground shaking during an earthquake can cause the collapse of dams, as well as seiches and tsunamis ("tidal waves").

Dam safety is a concern of County residents downstream from all large reservoirs. Dam safety is regulated by the State Department of Water Resources, Division of Safety of Dams. All large reservoirs in the County have been reviewed, and many have been strengthened, since awareness of seismic safety considerations was brought to a peak in 1971 by the near-failure of the Upper and Lower San Fernando Dams during the 6.5 Richter scale earthquake in Southern California. Nevertheless, the Office of Emergency Services has produced inundation maps and emergency plans covering various scenarios of dam failures in the County.

The safety of small dams, which are mostly used for stock watering and other agricultural pursuits, is largely a private matter, with present standards set by the County grading ordinance. Many small dams predate even this regulation. However, seismic activity threatens few, if any, small dams.

Tsunamis are sea waves created by undersea fault movement. Traveling through the deep ocean, a tsunami is a broad and shallow, but fast moving, wave that poses little danger away from shorelines. When it reaches the coastline, however, the wave form pushes upward from the ocean bottom to make a high swell of water that breaks and washes inland with great force. The waves may reach fifty feet in height on unprotected coasts, and one on record (Japan, 1896) killed nearly 30,000 people and destroyed over 10,000 homes. Several people were drowned in Crescent City, California, in 1964 by the tsunami generated by the "Good Friday" Alaska earthquake.

Historic records of the Bay Area used by one study indicate that nineteen tsunamis were recorded in San Francisco Bay during the period of 1868-1968. The maximum wave height recorded at the Golden Gate Tide gage was 7.4 feet, which may be regarded as a reasonable maximum for future events.

The available data indicates a systematic diminishment of wave height from the Golden Gate to about half that height on the shoreline near Richmond, and to nil at the head of the Carquinez Strait. Thus, the damage potential of a tsunami will tend to be greater in the Richmond area and show a general decrease toward the head of Carquinez Strait.

Flooding can also result from a **seiche**, which is a long wave-length, large-scale wave action set up in a closed body of water; a lake or reservoir. Seiches are known to have occurred during earthquakes, but are not well understood. None have been recorded in the Bay Area. Elongated and deep (relative to width) bodies of water seem most likely to be affected, but earthquake wave path direction may also play a role. A seiche can temporarily flood a shoreline in a manner similar to tsunamis; however, their destructive capacity is not as great. A seiche could also overtop any empoundment such as the dam empounding a near filled reservoir, releasing an unexpected flow downstream.

Goals

- 9-G. To ensure public safety by directing development away from areas which may pose a risk to life from flooding, and to mitigate flood risks to property.
- 9-H. To mitigate the risk of flooding and hazards to life, health, structures, transportation and utilities due to subsidence, especially in the San Joaquin-Sacramento Delta area.

Policies Regarding Protection from General Flooding Conditions

- 9-33. The areas designated on Figure IX-8 shall be considered inappropriate for conventional urban development due to flood hazards as defined by FEMA. Applications for development at urban or suburban densities in areas where there is a serious risk to life shall be denied.
- 9-34. In mainland areas affected by creeks, development within the 100-year flood plain shall be limited until a flood management plan can be adopted, which may include regional and local facilities if needed. The riparian habitat shall be protected by providing a cross section of channel suitable to carry the 100-year flow. Flood management shall be accomplished within the guidelines contained in the Open Space/Conservation Element.
- 9-35. In mainland areas along the rivers and bays affected by water backing up into the watercourse, it shall be demonstrated prior to development that adequate protection exists either through levee protection or change of elevation.
- 9-36. On islands in East County, development shall not be allowed until a study is performed to resolve issues and determine appropriate locations for development. This study shall be a high priority for the County and should include the following:

- o a risk assessment of development in that area; and
 - o an analysis of flooding due to runoff and tides, settlement of shallow soils, deep subsidence, liquefaction, and adequacy of insurance programs.
- 9-37. A uniform set of flood damage prevention standards should be established by the cooperative efforts of all County, State, and Federal agencies with responsibilities for flood control works and development in flood-prone areas in the County.
- 9-38. Flood-proofing of structures shall be required in any area subject to flooding; this shall occur both adjacent to watercourses as well as in the Delta or along the waterfront.
- 9-39. In developing areas which are subject to the provisions of the Flood Insurance Program, for which there is no reasonable expectation of flood control project participation by the Corps of Engineers and where a significant number of properties will be affected, the Flood Control District shall be permitted to construct 100-year flood protection works when so directed by the Board of Supervisors.
- 9-40. Planning Agency and Flood Control District review of any significant project proposed for areas in the County which are not presently in Flood Zones shall include an evaluation of the potential downstream flood damages which may result from the project.

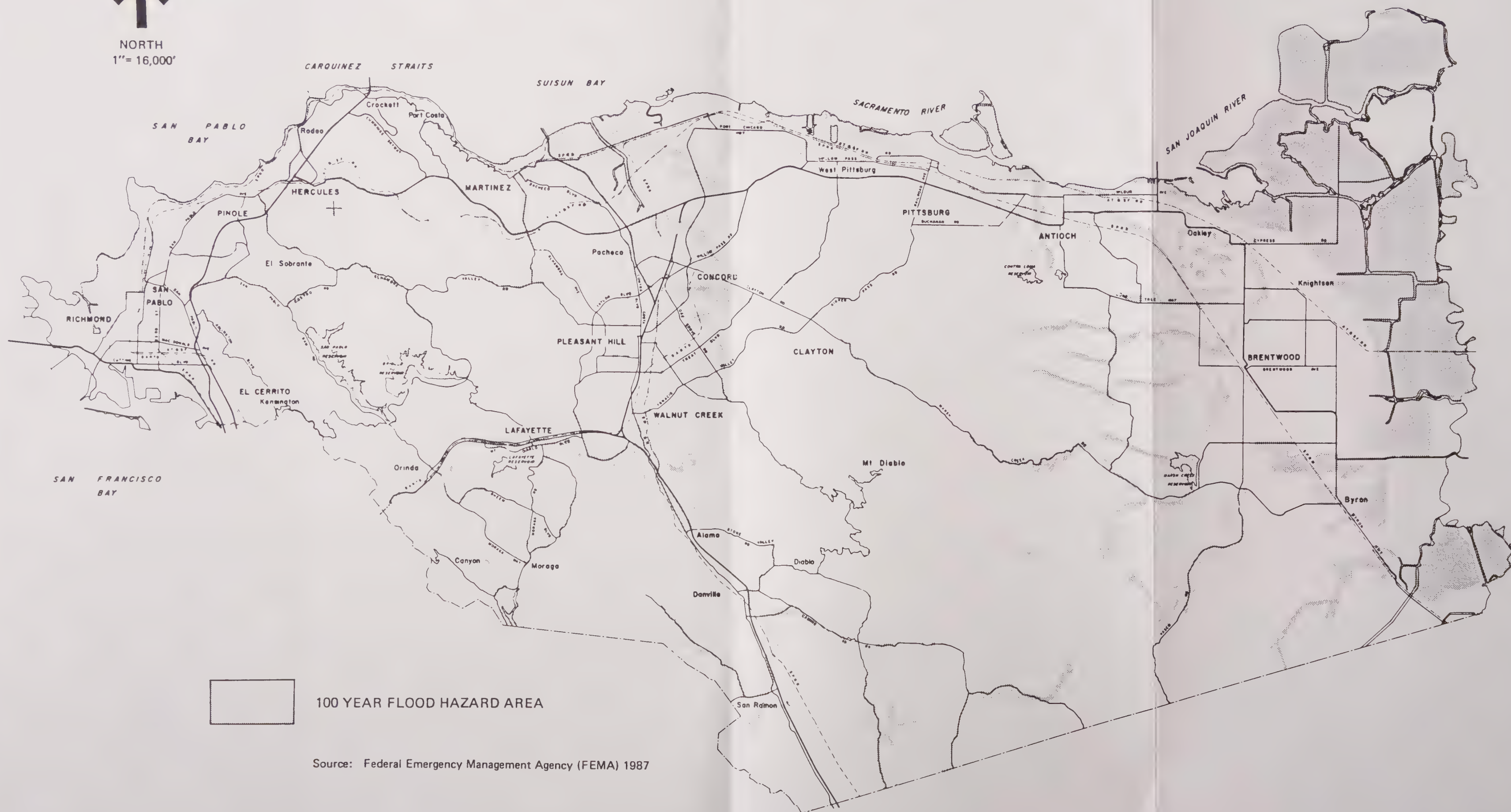
Policies Regarding the Greenhouse Effect

- 9-41. Buildings in urban development near the shoreline and in flood-prone areas shall be protected from flood dangers, including consideration of rising sea levels caused by the greenhouse effect.
- 9-42. Habitable areas of structures near the shore line and in flood-prone areas shall be sited above the highest water level expected during the life of the project, or shall be protected for the expected life of the project by levees of an adequate design.
- 9-43. Rights-of-way for levees protecting inland areas from tidal flooding shall be sufficiently wide on the upland side to allow for future levee widening to support additional levee height.
- 9-44. The County shall review flooding policies in the General Plan on an annual basis, in order to incorporate any new scientific findings regarding project sea level rise due to the greenhouse effect.
- 9-45. The County shall review flooding policies as they relate to properties designated by FEMA as within both the 100 and the 500 year floodplains.



NORTH
1" = 16,000'

FIG. IX-8 FLOOD HAZARD AREAS



Policies Regarding Subsidence

- 9-46. Whenever studies indicate subsidence is or may become a flood-threatening problem, the County should continue to monitor subsidence until flood protection is assured.
- 9-47. The General Plan shall not permit a substantial non-agricultural, residential population to be subjected to increased flood hazard due to subsidence.
- 9-48. Low density development of lands subject to subsidence shall take into account and fully mitigate the potential impacts of flooding based on the best currently available techniques.
- 9-49. Any development approvals for areas subject to subsidence shall include conditions which account for the need to support Delta reclamation and irrigation districts, and to strengthen weak and low levees prior to development.
- 9-50. The pumping of substantial quantities of water, oil, and gas in a leveed area is inconsistent with new major development approvals.

Policies Regarding Flooding Due to Levee or Dam Failure, or Tsunami

- 9-51. In order to protect lives and property, intensive urban and suburban development shall not be permitted in reclaimed areas unless flood protection in such areas is constructed, at a minimum, to the standards of the Flood Disaster Protection Act of 1973. Levees protecting these areas shall meet the standards of the U.S. Army Corps of Engineers.
- 9-52. Delta levees shall be rehabilitated and maintained to protect beneficial uses of the Delta and its water. Only those uses appropriate in areas subject to risk of flooding and seismic activity, such as agriculture and recreation, should be planned and approved. This policy shall not apply to Bethel Island or Discovery Bay.
- 9-53. Development of levee rehabilitation plans should consider methods to foster riparian habitat to the fullest extent possible consistent with levee integrity.
- 9-54. Agencies whose projects benefit from Delta levee protection, including the State and Federal government (water, highway, fish and wildlife, and recreational projects), PG&E, and private railroad companies, shall participate in funding Delta levee improvements and maintenance.
- 9-55. The potential effects of dam or levee failure are so substantial that geologic and engineering investigation shall be warranted as a prerequisite for authorizing public and private construction of either public facilities or private development in affected areas.

- 9-56. Development proposals should be reviewed with reference to dam failure inundation maps, as these become available, in order to determine evacuation routes.
- 9-57. Dam and levee failure, as well as potential inundation from tsunamis and seiches, shall be a significant consideration of the appropriateness of land use proposals.
- 9-58. Dams and levees should be designed to withstand the forces of anticipated (design) earthquakes at their locations.
- 9-59. Important dams and coastal levees shall be regarded as critical facilities that should not be sited over the trace of an active or potentially active fault.
- 9-60. Structures for human occupancy, and particularly critical structures, and potentially dangerous commercial or industrial facilities (e.g. plants for the manufacture or storage of explosive, flammable or toxic materials) shall be protected against tsunami hazard.

Maps of Flood Hazard Areas

Figure IX-8 depicts the general location of the Federal Emergency Management Agency (FEMA) flood hazard areas throughout Contra Costa County. Flood Hazard Areas are those areas which have statistical chance of flooding once in one hundred years. This map is not intended to be used to locate parcel specific sites in relation to Flood Hazard Areas, but to convey the general extent and location of such areas. The map also indicates areas of subsidence in the County, but does not presently include consideration of the greenhouse effect.

Implementation Measures

- 9-s. ~~Adopt /a~~ Revise the creek setback ordinance for residential and commercial structures, based upon the draft ordinance prepared by the Urban Creeks Task Force, in order to prevent property damages from bank failure along natural water courses.
- 9-t. Encourage the County Flood Control District to proceed with drainage improvements in areas subject to flooding from inadequate facilities, and to insure that additional new drainage facilities, including road culverts and bridges, are designed to pass the flow specified by County Ordinance Code.
- 9-u. Develop Flood Control Zone plans based on the concepts found in this General Plan. As adopted zone plans are revised, they should be brought into conformity with these concepts.
- 9-v. Draft and adopt a flood management plan for mainland areas affected by creeks, in accordance with the guidelines contained in the Safety Element and Open Space/Conservation Element of this General Plan.

- 9-w. Conduct a study of flooding conditions on islands in East County, including a risk assessment of development in that area and an analysis of flooding due to runoff and tides, settlement of shallow soils, deep subsidence, liquefaction, and adequacy of insurance programs.
- 9-x. Establish a uniform set of flood damage prevention standards in cooperation with appropriate County, State, and Federal agencies.
- 9-y. Through the environmental review process, ensure that potential flooding impacts, due to new development, including on-site and downstream flood damage, subsidence, dam or levee failure, and potential inundation from tsunamis and seiches, are adequately assessed. Impose appropriate mitigation measures (e.g. flood-proofing, levee protection, Delta reclamations).
- 9-z. Develop and implement Delta levee rehabilitation plans in cooperation with State and Federal agencies and the private sector, in accordance with the policies of this General Plan.
- 9-aa. Adopt ordinances implementing the Federal Emergency Management Agency Flood Insurance Program.
- 9-ab. Prohibit new structures which would restrict maintenance or future efforts to increase the height of the levees from being constructed on top or immediately adjacent to the levees.
- 9-ac. All analysis of levee safety shall include consideration of the worst case situations of high tides coupled with storm-driven waves.

Hazardous Land Uses

Introduction

Hazardous land uses and the transportation of explosive, flammable, toxic, or otherwise hazardous substances are not unique to Contra Costa County. However, since this is a County with extensive heavy industrial development along the west and north coasts, with a pattern of major freeways and highways passing through urbanized areas which carry many shipments of hazardous substances each day mixed with normal traffic, it is appropriate to evaluate the potential public safety hazard from these factors. Locations of hazardous land uses in the county are depicted in Figures IX-9a and IX-9b.

The land uses considered include airports, the Concord Naval Weapons Station, petroleum and chemical processing plants, oil and gas wells, petroleum product and natural gas pipelines, and land use hazards to navigation. Transportation of hazardous substances is concerned with the uncontrolled highway environment which could cause a minor traffic incident to become very serious if extremely hazardous materials were involved.

The heavy industry centered on the west and north shores of the County has the potential for significant risk to public safety because of the hazardous nature

of petroleum and chemical materials. Besides the explosion and fire potential of petroleum products, many toxic substances are employed in industry which are lethal in very low concentrations in gaseous form. Toxic and hazardous substances are concentrated in heavy industries along the coasts, and are also present in lesser but unknown quantities in industrial parks in the interior County. Despite industrial safety procedures, their presence in large quantities in the County, particularly close to and/or upwind of populated areas is a potential safety hazard at all times.

Many industries are located on reclaimed marshland underlain by soft, wet, unstable muds. Damages from earth movements are believed to have a low probability of risk because of the foundation design of buildings and other facilities to support the weight of the structures.

Information is not available on whether or not there are older tanks not sufficiently stabilized. Informal observation of tanks in the County indicates that there is no requirement to space tanks far enough apart to prevent a fire or explosion from spreading. In areas in which tanks are closely spaced, particularly where these are close to population centers, there is a potential for a disaster affecting a significant population. This risk is believed to be very low, based on the fact that such an incident has not occurred in forty years or more, but the seriousness of the event, should it occur, indicates that some additional measure of public safety may be advisable.

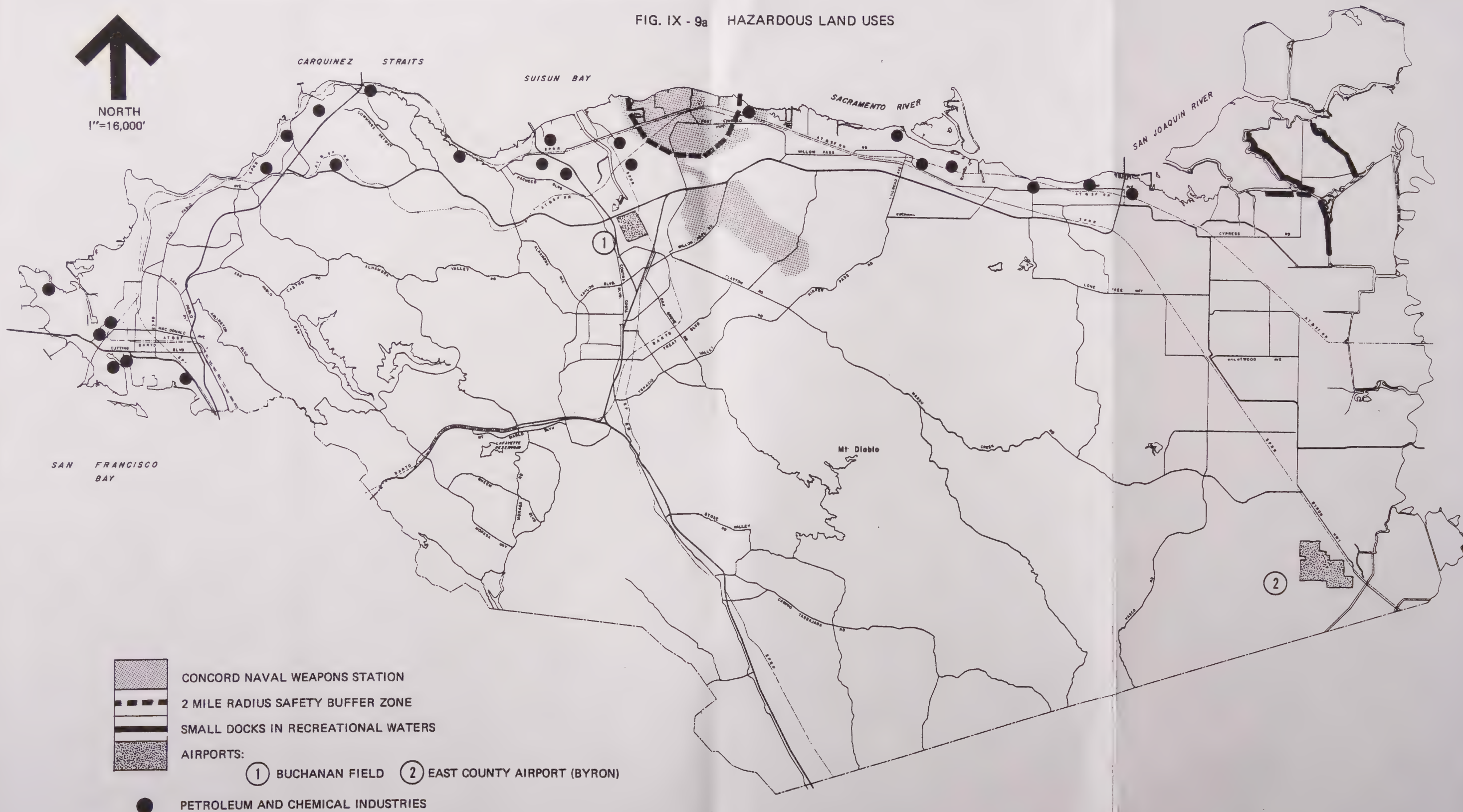
With over 70 square miles of water area and hundreds of miles of shoreline along the bays, rivers and sloughs, off-shore waters are particularly important in Contra Costa for industrial, commercial, agricultural and recreational uses. The public right to use open water for navigation is established in the state constitution and state law, but navigation can be hazardous if land-based activities result in obstructions such as docks, low bridges, or elevated pipelines.

Where waters are shallow for some distance from shore commercial and industrial docks are usually built out to the shipping channel as a more acceptable plan than continuously dredging a side channel closer to shore. The Corps of Engineers permit system prevents docks from encroaching into shipping channels. Small docks for commercial or private recreational use have proliferated around Bethel Island and on the mainland side of Sand Mound Slough. The U.S. Department of the Interior, noting "a plethora of uses not associated with commerce activities" on the State's waterways indicates that controls are necessary to protect the public right to use navigable waters.

It should also be recognized that because thousands of boaters use the Delta annually, many of them not skilled, the proliferation of smaller docks may be a hazard to public safety. The risk would not be of the nature of a disastrous single event, but is rather a persistent hazard which would probably affect only a few persons at a time.

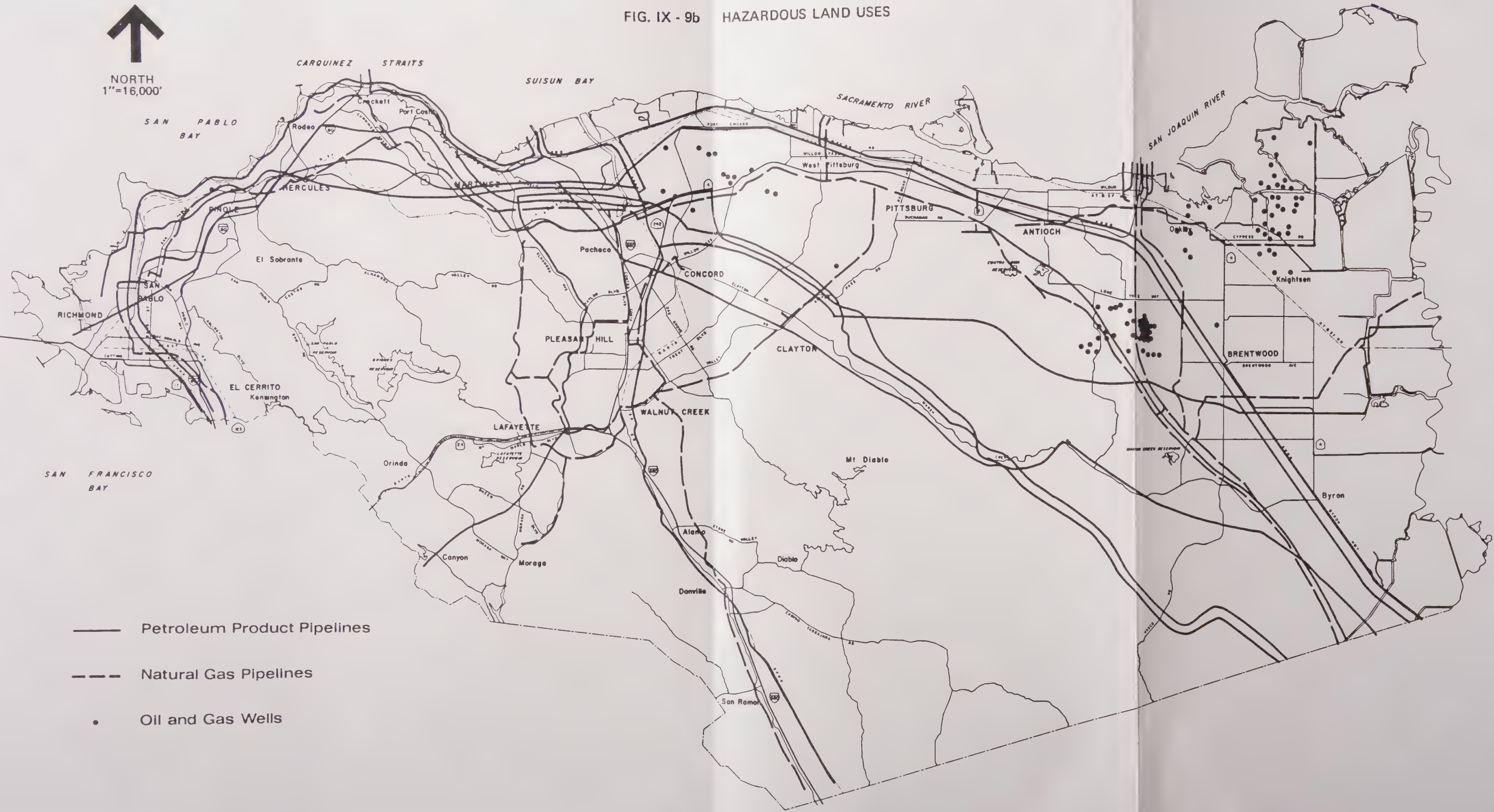
Hundreds of miles of pipelines, as much as 36 inches in diameter, for the transportation of natural gas, crude oil, and refined petroleum products tranverse the County. These are not confined to an industrial district but pass through population centers. Natural gas is believed to be less hazardous to the public than petroleum products because it is transported at lower pressures and when released, rises and dissipates into the atmosphere. Petroleum products are

FIG. IX - 9a HAZARDOUS LAND USES



**CONTRA COSTA COUNTY
CALIFORNIA**

FIG. IX - 9b HAZARDOUS LAND USES



pumped at pressures up to 200 psi (pounds per square inch) and when released, flow along the ground. Petroleum fires are more likely to spread to nearby property than vertical-burning natural gas fires.

In the County, pipelines cross varied and sometimes hazardous terrains, including active fault lines, landslide deposits, unstable slopes, and areas underlain by soft muds and peat. Geologic hazards from land movement exist to an unknown degree. The public safety hazard from a pipeline break depends on the proximity of the event to populated areas more than on the location of geologic hazards to the pipelines themselves.

Several hundred producing gas and oil wells are located in the County. Most are located at some distance from populated areas. Although there is an everpresent hazard of a well catching on fire, such incidences have been very few in number and the risk of such a fire causing a general disaster is remote. North and east of Brentwood continual parcel splits with a dispersed but sizeable population could lead to a public safety hazard if rural residential areas are permitted to encroach into the oil producing area. Because of the significant fire hazard in peat soils, a concentrated population plus numerous wells in peat soil areas could expose persons and properties to the hazard of peat fires which are difficult to control and may smoulder for weeks or months before they are completely extinguished.

Extremely hazardous and toxic substances pass through the County every day. The nature and degree of the specific hazard associated with each substance is not precisely known to any agency. Since over 1,200 new hazardous chemicals are marketed each year, the magnitude of acting on them would be immense, and regulations are less restrictive than for explosives.

No particular routes are designated, but most of these materials are regularly transported on the freeways and major roads designated as explosives routes. Thus, the problems of an uncontrolled environment and proximity to a large public add to the risk of an accident becoming a disaster. Many exotic chemicals require highly specialized knowledge and equipment for their control. Some are lethal at atmospheric levels as low as two parts per million. Local agencies such as the police and fire departments are not informed on appropriate methods of managing these substances and thus could worsen emergency conditions by their efforts to control a situation.

More elusive hazards in daily transit throughout the Contra Costa County are the various forms and quantities of radioactive materials transported in unmarked cars and trucks. In the event of an accident small radioactive sources can be dislodged from their protective containers and become extremely difficult to locate. The danger is not always immediately recognized, and alleviating the situation requires special knowledge and equipment. Persons may be unknowingly subjected to radiation in traffic accidents, home fires, and other day-to-day happenings.

Radioactive contamination is not a threat to life in smaller doses, but irreversible damage can occur and the long-range effects from exposure can be serious. Decontamination of affected property is also difficult. Although not considered capable of causing a general disaster at this time, the widespread virtually uncontrolled presence of radioactive materials in today's society is of a nature and degree to be considered a persistent hazard to public safety.

Explosives are defined in the California Health and Safety Code, Section 25651, as any substance or combination of substances the primary purpose of which is detonation or rapid combustion. Therefore most munitions and some chemical materials are included in the Class A explosives category regulated by the State and various bridge authorities.

There are numerous users of explosive materials in the County, but by far the largest is the Concord Naval Weapons Station (CNWS). Munitions are regularly transported by truck, train and ship. Other explosives used for construction and quarrying are present in smaller amounts throughout the County.

Two major railroad companies serve Contra Costa County; Santa Fe and Southern Pacific. Both transport munitions for CNWS. Truck transportaion of explosives through populated areas constitutes a significant public safety hazard. Permitted routes designated by the California Highway Patrol include the major freeways and other highways in the County. Drivers are competent in operating vehicles, but they may be uninformed in the proper handling of the cargoes under emergency situations. The records of the Office of Emergency Services show numerous emergency incidents in the last several years on Contra Costa's highways.

The County is responsible for determining land uses and community development configuration within its jurisdiction, but does not determine the nature of substances used on industrial and military sites. Nor does the County grant permits for the use or transportaion of hazardous substances, determine appropriate routes for transporting these materials, or require properly informed emergency personnel. Public safety from the use and transportation of hazardous substances depends on actions by the state and federal governments.

In the case of hazardous land uses, the County Planning Agency can minimize public safety risks by ensuring that hazardous use areas and residential populations are separated to the extent that fire or explosions on industrial and military properties or in gas and oil well areas will not spread to homes or businesses. Furture air traffic congestion at the Buchanan Field airport will be relieved by the construction of the East Contra Costa County Airport.

Prevention of hazardous materials being released into the air or water depends primarily on industrial safety requirements and procedures. By requiring that project proposals to construct tanks, pipelines, and other facilities are accompanied by thorough investigations of the natural and man-made hazards which could affect the proper functioning of these facilites, the County can be assured that risks are reduced to the minimum which can be achieved by engineering technology.

Since emergency and disaster plans and procedures have been prepared by the County Office of Emergency Services, it is appropriate for all potentially disasterous events to be reported to the OES, so that County emergency services such as traffic control, fire and medical equipment, and evacuation notification can be available if needed.

Contra Costa County is home to numerous businesses and industries that manufacture, store, use and dispose of hazardous materials and hazardous waste. These businesses are neighbors to an increasingly urbanized population. To ensure the protection of public health and safety and the environment, it is imperative to plan for the safe and effective use of hazardous materials and the management of hazardous waste. In recent years, there has been a growing understanding of the widespread use of hazardous materials, while environmental disasters such as Love Canal clearly reveal the consequences of unsafe management practices.

Contra Costa County began planning specifically for the management of hazardous materials and hazardous waste in 1983, with the establishment of the County Hazardous Waste Task Force. Most recently, the County has completed the County Hazardous Waste Management Plan, which is a comprehensive analysis of all aspects of hazardous waste management from generation through disposal. The Plan establishes goals and policies for the safe management of hazardous waste, and recommends the establishment of programs designed to reduce hazardous waste that is generated by 30 - 40 percent by the year 2000. The Plan, which serves as the primary planning document for hazardous waste management in the County and in the incorporated cities, projects the need for commercial hazardous waste management facilities and specifies criteria that will be used to determine whether a facility may be established.

Contra Costa County is one of the largest generators of hazardous waste within the state, with approximately 400,000 tons of this waste produced each year. Hazardous waste, however, constitutes a relatively small portion of the broader category of hazardous materials. Within our County, the use of hazardous materials is concentrated, in terms of quantity, in the industrial rim along the northern boundary. However, these materials are used throughout the County. Common neighborhood establishments, such as dry cleaners and photoprocessing businesses, use substantial quantities of hazardous materials.

The management of Hazardous Materials is the focus of the Contra Costa County Hazardous Materials Area Plan, which was adopted in January of 1988. This Plan outlines the procedures that County regulatory and response agencies will use for managing, monitoring, containing and removing the substances from an accidental release or a threatened release of a hazardous material. The Plan also identifies the agencies within the County responsible for the effective management of hazardous materials.

Goal

- 9-I. To provide public protection from hazards associated with the use and transport, treatment and disposal of hazardous substances.

Policies Regarding Hazardous Materials

- 9-61. Hazardous waste discharges from both private companies and from public agencies shall be identified and eliminated.

- 9-62. Storage of hazardous materials and wastes shall be strictly regulated.
- 9-63. Secondary containment and periodic examination shall be required for all storage of toxic materials.
- 9-64. Industrial facilities shall be constructed and operated in accordance with up-to-date safety and environmental protection standards.
- 9-65. Industries which store and process hazardous materials shall provide a buffer zone between the installation and the property boundaries sufficient to protect public safety. The adequacy of the buffer zone shall be determined by the County Planning Agency.
- 9-66. The County shall provide the East Contra Costa Airport which should relieve air traffic congestion at Buchanan Field.
- 9-67. The County should revise the ordinance code to require the issuance of land use permits for all industrial uses.
- 9-68. To the greatest possible extent new fuel pipelines should not be routed through centers of population nor should they cross major disaster evacuation routes.
- 9-69. In order to provide for public safety, urban and suburban development should not take place in areas where they would be subject to safety hazards from oil and gas wells. Development near oil and gas wells should meet recognized safety standards.
- 9-70. When an emergency occurs in the transportation of hazardous materials, the County Office of Emergency Services shall be notified as soon as possible.
- 9-71. Industry should be encouraged to utilize underground pipelines, rail, and water transportation of hazardous materials to the greatest extent feasible to take advantage of the greater separation from the general public provided by these modes of transportation.
- 9-72. Applications for private or commercial recreation docks which would encroach into waterways used primarily for recreation boating should be reviewed by the County to evaluate their aggregate impact upon public safety.

Implementation Measures

- 9-ad. Revise the County ordinance code to require the issuance of land use permits for all industrial uses.
- 9-ae. Encourage the State Department of Health and California Highway Patrol to review permits for radioactive materials on a regular basis and to promulgate and enforce public safety standards for the use of these materials, including the placarding of transport vehicles.

- 9-af. Request that State and federal agencies with responsibilities for regulating the transportation of hazardous materials be requested to review regulations and procedures, in cooperation with the County to determine means of mitigating the public safety hazard in urbanized areas.

Protection of Water Quality

Introduction

General issues dealing with domestic water supply are included in the Public Facilities and Services Element. This section focuses on water supply safety issues.

All residents in the County are dependent on a continuing supply of water. Water needs increase during a disaster, with extra amounts required for fire fighting, sanitation, and cleaning up debris. Damages to this essential supply can occur in the centralized parts of water supply systems--the intakes, canals, and major reservoirs--or can occur at the delivery points as a result of disruption of main lines or of the many subsidiary lines to each home, school, business, or hospital.

The case of damage to the centralized parts of the water supply system could affect thousands of persons, but can be repaired relatively quickly. Loss of water in localized areas would affect fewer people, but because repair times could be long, hazards to property and safety could be greater for inhabitants of such areas.

In a general or widespread disaster the water supply to several parts of the County could be disrupted for days or weeks. Although the risk of such an event is believed to be low, the seriousness of the impact on affected communities indicates that citizens, water suppliers and government agencies should be prepared to supplement water supplies for disaster recovery uses.

Large low-density areas of the County do not use water from large public systems, but instead rely on wells. The greatest risk to well water safety is contamination by sewage effluent from nearby septic systems. This is most likely to occur where both wells and septic systems are closely located in an area, where impervious soil conditions lead to standing water on the land during the rainy season, and where wells are shallow. Deep wells are relatively less susceptible to surface contamination.

A major area of additional concern is well water quality, especially in East County due to increasing levels of nitrite in the water. The problem was serious enough for Brentwood's Municipal System to contract with EBMUD for surplus water while the city improved its other sources of higher quality water. The County Health Department has identified high nitrite concentrations in a general configuration as shown on Figure IX-8. The exact causes of this rise in nitrites is not fully documented but agricultural fertilizers, leaking septic tanks and increased pumping have all been discussed as potential causes. Such water is hazardous to infants.

A parallel concern is the increased diversion of water from the Delta for export to Southern California. Salt water intrusion and a dropping of water quality has been measured in the Delta. Coupled with the greenhouse effect, the effect on water quality could be critical.

Further study is needed on the specific actions to be undertaken; however, it is clear that major efforts are needed to protect water quality and supplies of both surface and groundwater for domestic consumption.

Goals

- 9-J. To insure a continuous supply of safe water to County residents.
- 9-K. To protect the quality, quantity, and productivity of water resources as vital resources for maintaining the public, ecological and economic health of the region.

Policies

- 9-73. The County shall support local, regional, State, and federal efforts to continually improve water quality.
- 9-74. The County shall support water quality standards adequate to protect public health in importing areas as a priority at least equal in status to support of Bay/Delta estuary water standards.
- 9-75. Point sources of pollution shall be identified and controlled to protect adopted beneficial uses of water.
- 9-76. Public ownership of lands bordering reservoirs shall be encouraged to safeguard water quality.
- 9-77. The safety of valuable underground water supplies for present and future users shall be ensured by preventing contamination.
- 9-78. Prohibit underground discharges of toxic liquid wastes.
- 9-79. The use of toxic and nutritive chemicals by agricultural operators shall be minimized.
- 9-80. Land use plans and major project proposals that would encourage development served by wells and septic systems shall be approved only after there are assurances of the adequacy of the aquifer and that there is minimum risk of well contamination during the rainy season.
- 9-81. All wells and other entrances to aquifers shall be identified and protected.
- 9-82. Annexation of municipal or small service districts into the larger districts shall be supported when such annexations would result in water supply safety benefits to the consumers.

- 9-83. No new water districts shall be established.
- 9-84. The use of wells for emergency water supplies shall be considered in the emergency preparedness plan of domestic water suppliers.
- 9-85. The use of reclaimed water for industrial operations shall be encouraged.
- 9-86. Because of the public need for water of a quality suitable for domestic, industrial and agricultural uses, the County shall take an active role in reviewing Regional, State and Federal programs which could affect water quality and water supply safety in Contra Costa County.
- 9-87. New water storage reservoirs shall be encouraged in appropriate locations subject to adequate mitigation of environmental impacts.
- 9-88. Discourage the development of new wells for domestic use in areas with high nitrite concentrations in the ground water.

Maps

Figure VII-4 in the Public Facilities/Services Element depicts areas within the County which are within a septic tank installation moratorium declared by the County Health Officer. These areas cannot be approved for septic tank installation due to the effects such tanks would have on potable water supplies.

Implementation Measures

- 9-ag. Institute a detailed inventory of County aquifers to make known these water sources which, among other uses, may be utilized in the event of water shortage.
- 9-ah. A permit system shall be required for all future wells or other shafts to aquifers.
- 9-ai. Monitoring of well water quality shall be required.
- 9-aj. Develop drilling and sealing ordinances designed for protection of aquifers and the public health and welfare.
- 9-ak. Instruct the County Health Department to do a study of the nitrite groundwater problem for East County including recommendations on continued approval of new wells for residential use.
- 9-al. Prohibit underground discharge of toxic liquid wastes through adoption of a hazardous materials ordinance or other means.

- 9-am. Encourage local, state, and federal agencies to investigate and recommend methods of maintaining agricultural productivity with reduced amounts of toxic and nutritive chemicals which can damage water quality.
- 9-an. Encourage all water districts in their efforts to provide water supply safety for emergency and disaster uses by the most practicable means.
- 9-ao. Encourage domestic water services to participate in the State Emergency Services Program for Countywide coordination of emergency response planning and to take advantage of low cost purchase of auxiliary power equipment where these programs would result in greater security for domestic water supplies.
- 9-ap. Encourage domestic water suppliers to undertake programs to inform homeowners, schools, convalescent hospitals, and other institutions of appropriate and efficient emergency use of available water in an immediate post-disaster recovery period.
- 9-aq. Review and evaluate regional, State, and Federal programs which could affect water quality and water supply safety in the County.

Public Protection Services and Disaster Planning

Introduction

This section of the Safety Element includes a discussion of the essential public protection services which will provide the major work force, facilities and equipment for disaster recovery.

The Contra Costa County Office of Emergency Services prepares disaster plans for the County and coordinates required emergency services and facilities from all agencies and levels of government to meet emergency and disaster needs. While there is some overlap between this element and the Public Facilities and Services Element, the policies contained here are primarily related to disaster situations, rather than ongoing facilities and services standards.

Aside from the emergency/disaster situations previously described in this element such as earthquakes, floods and accidental releases of hazardous materials, the Safety Element addresses the additional areas of wildfire, emergency medical response and crime prevention.

a. Wildfire

Fire hazards present a considerable problem to vegetation and wildlife habitats throughout the County. Grassland fires are easily ignited, particularly in dry seasons. These fires are relatively easily controlled if they can be reached by fire equipment; the burned slopes, however, are highly subject to erosion and gullyng. While brushlands are naturally adapted to frequent light fires, fire protection in recent decades has resulted in heavy fuel accumulation on the ground.

Brush fires, particularly near the end of the dry season, tend to burn fast and very hot, threatening homes in the area and leading to serious destruction of vegetative cover. While woodland fires are relatively cool under natural conditions, a brush fire which spreads to a woodland could generate a destructive hot crown fire. No suitable management technique of moderate cost has been devised to reduce the risk of brush fires.

Because the natural vegetation and dry-farmed grain areas of the County are extremely flammable during the late summer and fall, wildfire is a serious hazard in undeveloped areas and on large lot homesites with extensive areas of unirrigated vegetation. Several factors affect the relative degree of wildfire hazard, including atmospheric humidity, slope steepness, vegetation type, exposure to the sun, wind speed and direction, accessibility to human activities and accessibility to firefighting equipment. Taking these factors into consideration, a fire hazard severity scale has been devised which characterizes areas of the County by the number of days of moderate, high and extreme fire hazard throughout the County. Mapped information on fire hazard severity is included later in this section.

Peat fires represent a special hazard in that once ignited, they are extremely difficult to extinguish. In some instances, islands have been flooded in order to extinguish peat fires. Any area lying generally east of the mean high water line may be peaty due to the marshy origin of the soil, although local areas of mineral soil are present within the general area.

b. Emergency Medical Response

Medical emergency services are provided by hospitals, ambulance companies and fire districts. Considerable thought and planning have gone into efforts to improve responses to day-to-day emergencies and planning for a general disaster response capability. However, certain areas remain which require improvement to enhance public safety.

Identification of streets, house numbers, and townhouse and apartment units remains a major factor hampering locating patients. Design of multi-story buildings rarely includes provision for elevators or stairways which can accommodate gurneys, which is the preferred method of transporting patients because it allows the patient to lie down and for continuous care to be administered. In the event of a disaster, many persons could be affected.

Although substantial progress has been made in terms of earthquake restrainers being added to freeway overpasses, areas of limited access to hospitals such as Lafayette, Moraga and Orinda are still at some risk to access blockage due to the potential for landslides or traffic accidents to temporarily close roads.

c. Crime Prevention

While it is not a purpose of this element to deal with crime as such, there are planning related opportunities to aid in the efficiency of police services and incorporate crime reducing features into development projects which could result in greater public safety at relatively little public cost.

Response times can be hampered by uncoordinated street naming between jurisdictions, or by conflicting street numbering between cities and the County on the same road/street name.

Defensible space is a concept which incorporates crime prevention principles into development design. This concept has already been discussed in the "Public Protection" section of the Public Facilities/Services Element.

Goals

- 9-L. To provide for a continuing high level of public protection services and coordination of services in a disaster.

Policies

- 9-89. The Office of Emergency Services, in cooperation with the Cities, shall delineate evacuation routes and, where possible, alternate routes around points of congestion.
- 9-90. The Office of Emergency Services, in cooperation with public protection agencies, shall delineate emergency vehicle routes for disaster response, and where possible, alternate routes where congestion or road failure could occur.
- 9-91. In order to insure prompt public protection services, dwelling unit numbers shall be required to be easily seen from the street or road.
- 9-92. In order to reduce the risk of crime at little public cost the County shall encourage the use of citizen action programs such as Neighborhood Alert and Operation ID.
- 9-93. *THE PLANNING AGENCY IN COOPERATION WITH THE SHERIFF'S DEPARTMENT SHALL DEVELOP GUIDELINES FOR DEFENSIBLE SPACE DESIGN OF BUILDINGS AND MAJOR SUBDIVISIONS//PROJECTS//AND//SHALL//REVIEW//PROJECTS//TO//INSURE//THAT CRITICAL BUILDING FEATURES ARE HIGHLIGHTED.*
- 9-93. The County shall require adequate access for medical emergency equipment in high-occupancy buildings of over two stories.
- 9-94. Every high-rise building shall be designed and constructed to provide for the evacuation of occupants and/or for the creation of a safe environment in case of a substantial disaster, such as a severe earthquake or fire.
- 9-95. Policies related to wildland fire risk are contained in the Fire Services section of the Public Facilities Element.
- 9-96. Restrict homes built in rural areas or adjacent to major open space areas from having roofs which are covered with combustible materials.

Maps

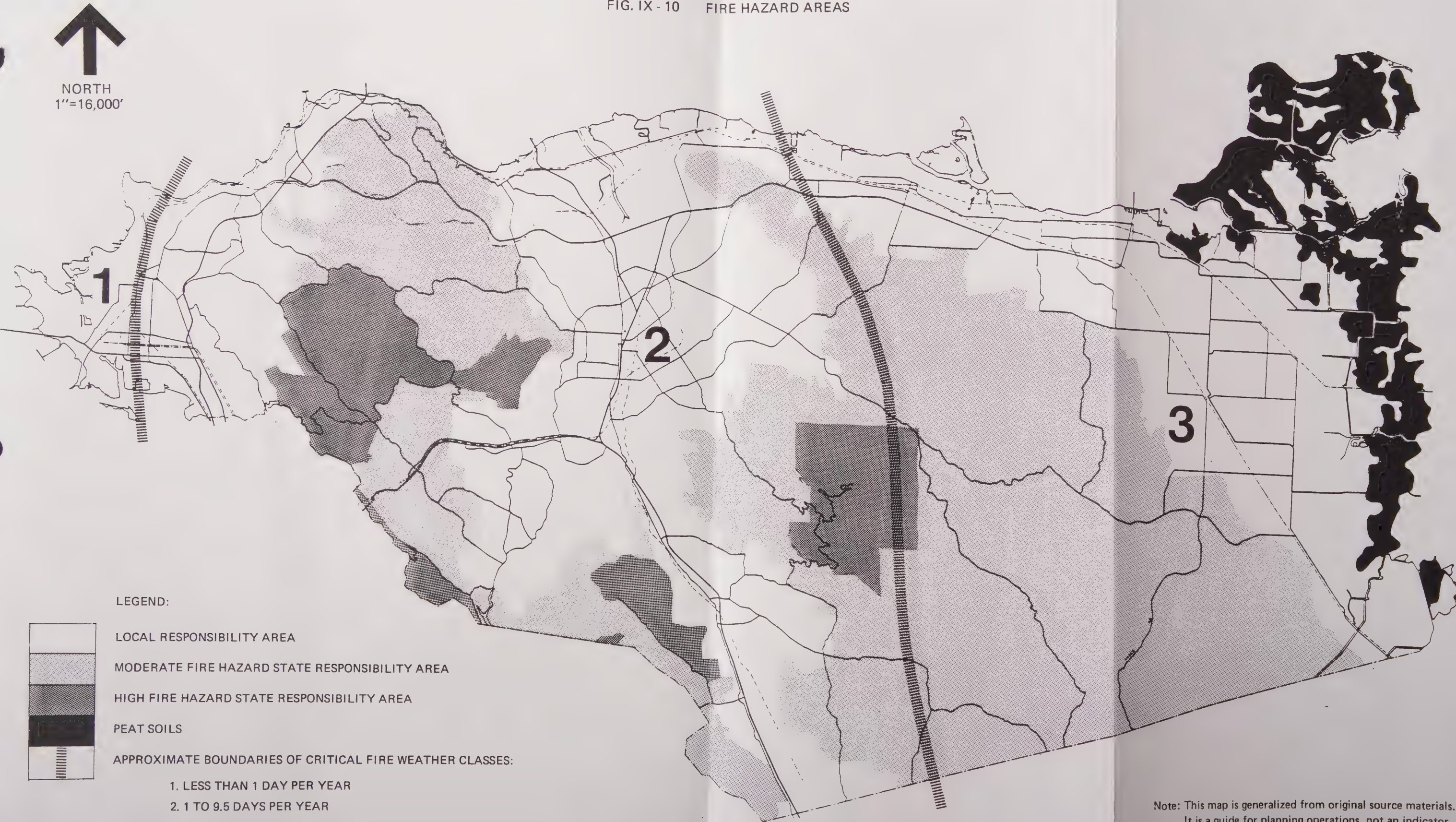
In general, the fire hazard severity is related to distance from the marine atmospheric influences of the Pacific Ocean, intervening topography, slope steepness and vegetative type and coverage. Figure IX-10 contains the characterization of fire hazard for the County by Fire Weather Classes, and delineates those areas of the County which are subject to peat fires.

The Fire Weather Classes depicted on Figure IX-10 are defined in terms of the number of days per year of Critical Fire Weather. Class I has 0 to 1 days per year of Critical Fire Weather, Class II has 1 to 9.5 days and class III has over 9.5 days.

Implementation Measures

- 9-ar. Undertake a program in cooperation with the Cities to unify street name and numbering systems.
- 9-as. In cooperation with the Cities and public protection agencies, delineate evacuation routes, emergency vehicle routes for disaster response and, where possible, alternative routes where congestion or road failure could occur.
- 9-at. Development of areas identified by the criteria of the State Division of Forestry as having an Extreme Fire Hazard will be avoided where possible. Homes located in extreme or high fire hazard areas will be constructed with fire-resistant materials and the surroundings should be irrigated or landscaped with fire resistant plants.
- 9-au. Require projects which encroach into areas which are determined to have a high or extreme fire hazard, or which incorporate wildfire hazard areas, to be reviewed by the appropriate Fire Bureau to determine if special fire prevention measures are advisable.
- 9-av. Major developments will not be approved if fire fighting services are not available or are not adequate for the area.

FIG. IX - 10 FIRE HAZARD AREAS



NORTH
1"=16,000'

LEGEND:

- LOCAL RESPONSIBILITY AREA
- MODERATE FIRE HAZARD STATE RESPONSIBILITY AREA
- HIGH FIRE HAZARD STATE RESPONSIBILITY AREA
- PEAT SOILS

APPROXIMATE BOUNDARIES OF CRITICAL FIRE WEATHER CLASSES:

- 1. LESS THAN 1 DAY PER YEAR
- 2. 1 TO 9.5 DAYS PER YEAR
- 3. 9.5 OR MORE DAYS PER YEAR

SOURCE: Fire Prevention Bureau
State of California
Department of Forestry and Fire Protection
Sacramento, CA

Note: This map is generalized from original source materials.
It is a guide for planning operations, not an indicator
of ground conditions on individual sites.

X. NOISE ELEMENT

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CHAPTER X

NOISE ELEMENT

Authority and Purpose

Section 65302(f) of the California Government Code requires that a Noise Element be prepared as part of all city and county General Plans. The State law requires that a jurisdiction's Noise Element identify and work toward mitigation of noise problems in the community. The Noise Element recognizes the guidelines established by the State Office of Noise Control and the State Department of Health Services and analyzes and quantifies, to the extent practicable as determined by the legislative body, current and projected noise levels for all of the following sources:

- o highways and freeways;
- o primary arterials and major local streets;
- o passengers and freight on-line railroad operations and ground rapid transit systems;
- o commercial, general aviation, heliport, helistop, and military airport operations; aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
- o local industrial plants including, but not limited to, railroad classification (switching) yards;
- o other ground stationary noise sources identified by local agencies as contributing to the community noise environment.

Noise contours are to be shown for all of these sources and stated in terms of the day/night sound level (DNL) or Community Noise Equivalent Level (CNEL). The noise metric used in this Noise Element is the day/night sound level. The abbreviation for day/night sound level is DNL (L_{dn} , when used in mathematical expressions). The DNL is a 24-hour average noise level with a 10-dB penalty for nighttime noise levels. The nighttime penalty accounts for people's increased sensitivity to noise during sleeping hours. The DNL is the preferred metric for implementing the State of California's Noise Insulation Standards. For a complete discussion of community noise and noise metrics, please refer to Appendix __, "Fundamental Concepts of Environmental Noise."

Introduction

In Contra Costa County, traffic along freeways (Interstate 80, Interstate 680, State Route 24, and State Route 4) and major arterials (Willow Road and Ygnacio Valley Road) are the primary sources of vehicular traffic noise. Rail operations also contribute to the noise environment in the county. The Atchinson, Topeka, and Santa Fe (AT&SF) and Southern Pacific railroad corridors in the county are primarily freight lines. These lines generate high noise levels during passbys and are required to sound their whistles when crossing roadways and grade. The Bay Area Rapid Transit (BART) system is an electrically-driven passenger line.

BART passbys are typically less noisy than the freight trains and do not have at-grade crossings.

Existing aircraft activity also contributes to the noise in Contra Costa County. Buchanan Field, near Concord, is the primary source of aircraft noise. Other sources of aircraft noise are local emergency heliports and military helicopter activity. The remaining major noise sources are industrial plants (oil refineries, etc.) and the Camp Parks Reserve Forces Training Area.

Goals

- 10-A. To improve the overall environment by reducing annoying and physically harmful levels of noise for existing and future residents, and for all land uses in the County.
- 10-B. To maintain appropriate noise conditions in all areas of the county.
- 10-C. To ensure that new developments will be constructed so as to limit the effects of exterior noise on future occupants.
- 10-D. To recognize the economic impacts of noise control and encourage an equitable distribution of these costs.
- 10-E. To recognize citizen concerns regarding excessive noise levels, and to utilize measures through which the concerns can be identified and mitigated.

Policies

- 10-1. New projects shall be required to meet acceptable exterior noise level standards as established in the noise and land use compatibility guidelines contained in Figure X-1. These guidelines, along with the future noise levels shown in the future noise contours maps, should be used by the County as a guide for evaluating the compatibility of "noise-sensitive" projects in potentially noisy areas.
- 10-2. The standard for outdoor noise levels in residential areas is a CMEX DNL of 60 dB or less. However, a CMEX DNL of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints. THIS STANDARD SHOULD BE APPLIED WHERE OUTDOOR USE IS A MAJOR CONSIDERATION (E.G., BACKYARDS IN SINGLE FAMILY HOUSING DEVELOPMENTS, AND RECREATION AREAS IN MULTIFAMILY HOUSING DEVELOPMENTS).
- 10-3. Title 24, Part 2, of the California Administrative Code requires that new multiple family housing projects, hotels, and motels exposed to a CMEX DNL of 60 dB or greater have a detailed acoustical analysis describing how the project will provide an interior CMEX DNL of 45 dB or less. The County shall also require new single-family housing projects to provide for an interior CMEX DNL of 45 dB or less.

- 10-4. If an area is currently below the maximum "normally acceptable" noise level, an increase in noise up to the maximum should not necessarily be allowed.
- 10-5. Public projects shall be designed and constructed to minimize long-term noise impacts on existing residents.
- 10-6. In developing residential areas exposed to a ~~DNEL~~ DNL in excess of 65 dB due to single events such as airport, helicopter, or train operations, indoor noise levels due to these single events shall not exceed a maximum A-weighted noise level of 50 dB in bedrooms and 55 dB in other habitable rooms.
- 10-8. Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for any adjacent land uses and should be conditioned to occur during normal work hours of the day, so as to provide relative quiet during the more sensitive evening and early morning periods.
- 10-9. Sensitive land uses shall be encouraged to locate away from noisy areas, or the impacts of noise on these uses shall be mitigated. If residential areas are planned adjacent to industrial noise sources, then a noise study shall be performed to determine the extent of any noise impacts and recommend appropriate noise mitigation measures.
- 10-10. Development located within 6,000 feet of Camp Parks Reserve Forces Training Area shall be required to prepare a detailed acoustical analysis. The analysis shall determine if the project will be severely affected by noise and, if so, what noise mitigation measures are available.
- 10-11. Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.

Maps of Noise Contours and Sensitive Areas

Existing and future noise contours have been prepared for freeways and major arterials in the County. Table X-1 summarizes the information contained in the future noise contours. The complete set of existing and future noise contours is available for review at the County Community Development Department offices.

Noise contours are typically used for planning purposes in conjunction with new residential development. Table X-1 is designed to help planners, developers and consultants identify if a parcel or proposed residential project is potentially impacted by traffic noise. The table can be used as follows:

- Step a. Determine distance of project from major roadways.
- Step b. From Table X-1, determine the distance from the roadway to the 60 DNL contour.

Table X-1
Future Noise Levels
Along Freeways and Major Arterials

<u>Road/Segment</u>	<u>DNL at 100 ft. (dB)</u>	<u>Distance to 60 DNL Contour (feet)</u>
Appian Way		
Route 80 to Valley View Road	65	270
Valley View Road to San Pablo Dam Road	66	320
Bethel Island Road		
Cypress Road to Gateway Road	67	370
Byron Highway (J4)		
Route 4 to Alameda County Line	69	500
Camino Diablo Road		
Marsh Creek road to Byron Highway	60	100
Clayton Road		
Kirker Pass Road to Marsh Creek Road	66	320
Crow Canyon Road		
Alameda County Line to Bollinger Canyon Road	73	930
Cummings Skyway		
Route 80 to Route 4	65	270
Cypress Road		
Route 4 to Bethel Island Road	66	320
Danville Boulevard		
Rudgear Road to Stone Valley Road	62	160
Stone Valley Road to El Portal	60	100
Kirker Pass Road		
Concord Boulevard to Railroad Avenue	73	930
Marsh Creek Road		
Clayton To Route 4	62	160
Lone Tree Way		
Empire Mine Road to O'Hara Avenue	68	430
O'Hara Avenue to Route 4	60	100

Table X-1
Future Noise Levels
Along Freeways and Major Arterials
(con.)

<u>Road/Segment</u>	<u>DNL at 100 ft. (dB)</u>	<u>Distance to 60 DNL Contour (feet)</u>
Pacheco Boulevard		
Pine Street to Morello Avenue	61	130
Morello Avenue to Route 4	65	270
Route 4 to Concord Avenue	66	320
Pleasant Hill Road		
Reliez Valley Road to Oak Park Boulevard	69	500
Port Chicago Highway		
Pacifica Avenue to Willow Pass Road	64	230
San Pablo Avenue		
Route 80 to Rodeo	67	370
Pinole to Richmond	63	200
San Pablo Dam Road		
San Pablo Avenue to Appian Way	70	590
Appian Way to Valley View Road	63	200
Valley View road to Castro Ranch Road	64	230
Castro Ranch Road to Bear Creek Road	67	370
Stone Valley Road		
Route 680 to Miranda Avenue	62	160
Miranda Avenue to Green Valley Road	61	130
Camino Tassajara Road		
Black Hawk Road to Finley Road	67	370
Finley Road to Alameda County Line	66	320
Taylor Boulevard		
Pleasant Hill Road South to Pleasant Hill Road North	68	430
Vasco Road		
Camino Diablo Road to Alameda County Line	71	680
Willow Pass Road		
Route 4 to Pittsburg	65	270
Ygnacio Valley Boulevard		
Walnut Creek to Clayton Road	70	590

Table X-1
Future Noise Levels
Along Freeways and Major Arterials
(con.)

<u>Road/Segment</u>	<u>DNL at 100 ft. (dB)</u>	<u>Distance to 60 DNL Contour (feet)</u>
Route 4		
Route 80 to Cummings Skyway	72	800
Cummings Skyway to McEwen Road	73	930
McEwen Road to Alhambra Avenue	74	1100
Alhambra Avenue to Morello Avenue	75	1300
Morello Avenue to Solano Way	77	1700
Solano Way to Route 242	78	2000
Route 242 to Port Chicago Highway	77	1700
Port Chicago Highway to Railroad Avenue	78	2000
Lone Tree Way north to Route 160	72	800
Route 160 to Oakley Road	67	370
Oakley Road to Cypress Road	66	320
Cypress Road to Lone Tree Way east	65	270
Lone Tree Way east to Brentwood Road	67	370
Brentwood Road to Sellers Avenue	60	100
Sellers Avenue to Byron Highway	72	800
Byron Highway to San Joaquin County Line	73	930
Route 24		
Alameda County Line to Orinda	78	2000
Route 80		
Solano County to Willow Avenue	79	2300
Route 680		
Solano County Line to Pacheco Boulevard	81	3200
Pacheco Boulevard to Highway 4	82	3700
Highway 4 to Concord Avenue	81	3200
Oak Park Boulevard to Route 24	81	3200
Route 24 to Alcosta Boulevard	82	3700

- Step c. If the project is within the 60 DNL contour, an acoustical study should be initiated.

These contours do not always account for the acoustical shielding provided by site geometry or terrain. Therefore they may overestimate the noise exposure of a particular site. However, noise contours should only be used as a screening tool. Site specific noise levels and other acoustical issues should be addressed in the acoustical study for the project.

Existing and future noise levels are based on the Federal Highway Administration Traffic Noise Prediction Model (FHWA-RD-77-108) and a series of continuous 24 hour noise measurements along freeways and major arterials in the county. The FHWA method predicts the average hourly noise level along a roadway based on the number of vehicles, speed of vehicles and truck percentage. The 24 hour noise measurements serve to calibrate the FHWA model and enable the determination of DNL's along freeways and major arterials in the County.

Implementation Measures

Development Review

- 10-a. Continue to require and review an analysis of noise-related impacts as part of the existing project development review procedures of the County.
- 10-b. Evaluate the noise impacts of a proposed project upon existing land uses in terms of the applicable Federal, State, and local codes, and the potential for adverse community response, based on a significant increase in existing noise levels.
- 10-c. Encourage use of the following mitigation measures to minimize noise impacts of proposed development projects:
 - (1) Site planning. Proper site planning to reduce noise impacts is the first mitigation measure that should be investigated. By taking advantage of the natural shape and terrain of a site, it often is possible to arrange the buildings and other uses in a manner which will reduce and possibly eliminate noise impact. Specific site planning techniques include:
 - (a) increasing the distance between the noise source and the receiver;
 - (b) placing non-noise-sensitive land uses such as parking lots, maintenance facilities, and utility areas between the source and the receiver;
 - (c) using non-noise-sensitive structures such as garages to shield noise-sensitive areas; and
 - (d) orienting buildings to shield outdoor spaces from a noise source.

- (2) Architectural layout of buildings. In many cases, noise reduction can be attained by careful layout of noise-sensitive spaces. Bedrooms, for example, should be placed away from freeways. Quiet outdoor spaces can be provided next to a noisy highway by creating a U-shaped development which faces away from the highway.
- (3) Noise barriers or walls are commonly used to reduce noise levels from ground transportation noise sources and industrial sources. While serving a dual purpose in that they can reduce noise level both outdoors and indoors, to be effective, a barrier must interrupt the line of sight between the noise source and the receiver. A barrier should provide at least 5 dB of noise reduction to achieve a noticeable change in noise levels.
- (4) Construction modifications. If site planning, architectural layout, noise barriers, or a combination of these measures do not achieve the required noise reduction, construction modification to walls, roofs, ceilings, doors, windows, and other penetrations may be necessary.

CEQA Guidelines

- 10-d. Amend the County CEQA Guidelines to define projects ~~which~~ that have the potential to increase long-term noise levels by 5/dB or greater above the levels specified in the policy section of this Plan as generating a significant impact on the environment.
- 10-e. Noise mitigation features shall be incorporated into the design and construction of new projects or be required as conditions of project approval.

Zoning and Other Ordinance Amendments

- 10-f. Adopt a noise ordinance as the method to regulate noise from sources other than transportation sources. The noise ordinance should include specific noise level limits for stationary sources (i.e., projects). These noise level limits should take into account the type of adjacent land use (i.e., residential, commercial or industrial). The State of California Office of Noise Control has published a Model Community Noise Ordinance.

Other Programs

- 10-g. Coordinate efforts among the County, the cities, BART, State government and other agencies to develop a multi-phased action program to mitigate noise impacts.
- 10-h. Prepare and adopt a noise abatement program that is consistent with State and Federal guidelines, legally valid, and cost-effective.

